

Service  
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Service

15MF605T/17  
20MF605T/17  
15MF500T/37

# Service Manual

Horizontal frequencies  
F1-15"30 - 49kHz  
F1-20"30 - 40KHz

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## SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

## Go to cover page

Proper service and repair is important to the safe, reliable operation of all HP Consumer Electronics Company\*\* Equipment. The service procedures recommended by HP and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. HP could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, HP has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by HP must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

\* \* Hereafter throughout this manual, HP Consumer Electronics Company will be referred to as HP.

### WARNING

Critical components having special safety characteristics are identified with a by the Ref. No. in the parts list and enclosed within a broken line\* (where several critical components are grouped in one area) along with the safety symbol on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design.

Servicer assumes all liability.

\* Broken Line

FOR PRODUCTS CONTAINING LASER :

DANGER-

Invisible laser radiation when open.  
AVOID DIRECT EXPOSURE TO BEAM.

CAUTION-

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION-

The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

- Take care during handling the LCD module with backlight unit
- Must mount the module using mounting holes arranged in four corners.
  - Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
  - Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
  - Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
  - Make certain that treatment person's body are grounded through wrist band.
  - Do not leave the module in high temperature and in areas of high humidity for a long time.
  - Avoid contact with water as it may cause a short circuit within the module.
  - If the surface of the panel becomes dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

1. General

1.1. Product description

This 15 LCD Monitor/TV is specified as a display peripheral with analog video signal input and include TV function with 15 TFT LCD display.  
Horizontal scan range is 30 ~49KHz and refresh range is 60 ~ 62Hz.  
This scan range allows it to display resolution up to 1024\*768 non-interlaced at 60 Hz refresh rate. The image can be adjust through OSD control, these adjustments can be stored on a board memory Including 11 factory pre-load modes.

1.2. Basic data

1.2.1. LCD

1.2.1.1 LPL panel

Type NR. : LC150X02  
Display area(mm) : 304.128(H) x 228.096(V) (15.0-inch diagonal)  
Number of Pixels : 1024(H) x 768(V)  
Pitch (mm) : 0.297(H) x 0.297(V)  
Color pixel arrangement : RGB vertical stripes  
Display operating mode : Transmissive mode, normally white  
Color depth : 16M colors (6 bits with FRC)  
Brightness (cd/m<sup>2</sup>) : 450(cd/m<sup>2</sup>)(Center 1 points Typ.)  
Viewing angle (CR>10) : -65 ~ 65 (H), -55 ~ 45 (V)(Typ.)  
Surface treatment : Hard coating(3H) & Anti-glare (Haze 13%)  
Electrical interface : LVDS (1 pixel/clock)  
Response Time : 16ms(typ.) (Tr+Tf)  
Power Consumption (W) : 16.9(typ.)  
Contrast ratio : Typical 400 : 1  
Module size (mm) : 332.8(W) x 262.8(H) x 18.0(D)  
Module weight (g) : 1750  
Backlight : 4 CCFL

1.2.1.2. AUO panel

Type NR. : T150XG01  
Display area(mm) : 304.128(H) x 228.096(V) (15.0-inch diagonal)  
Number of Pixels : 1024(H) x 768(V)  
Pitch (mm) : 0.297(H) x 0.297(V)  
Color pixel arrangement : RGB vertical stripes  
Display operating mode : TN mode, normally white  
Color depth : 16M colors (6 bits with FRC)  
Brightness (cd/m<sup>2</sup>) : 450 nit (typ.) @ 6.0mA  
Viewing angle (CR>10) : -70 ~ 70 (H), -60 ~ 60 (V)(Typ.)  
Surface treatment : Hard coating(3H) & AG  
Electrical interface : 1ch LVDS (8bit)  
Response Time : 16ms(typ.) (Tr+Tf)  
Power Consumption(W) : 22 (typ.) @ 6.0mA  
Contrast ratio : Typical 450 : 1  
Module size (mm) : 326.5(W) x 253.5(H) x 14.4(D) (typ.)  
Module weight (g) : 1350  
Backlight : 4 CCFL

1.2.1.3. CPT panel

Type NR. : CLAA150XP03  
Display area(mm) : 304.1(H) x 228.1(V) (15.0-inch diagonal)  
Number of Pixels : 1024(H) x 768(V)  
Pitch (mm) : 0.297(H) x 0.297(V)  
Color pixel arrangement : RGB vertical stripe  
Display operating mode : Normally white TN  
Color depth : 16.2M colors (6 bits with FRC)  
Brightness (cd/m<sup>2</sup>) : 400nit(typ.) (center, 6.5mA)  
Viewing angle (CR>10) : -70° ~ 70°(H), -60° ~ 65°(V)(Typ.)  
Surface treatment : Anti-glare  
Wide viewing angle technology : Optical Compensation Film  
Response Time : 16ms(typ.)  
Power Consumption(W) : 17.1 (typ.)  
Contrast ratio : Typical 500 : 1  
Module size (mm) : 326.5(W) x 253.5(H) x 14.0(D) (typ.)  
Module weight (g) : 1300  
Backlight : CCFL, 4 tables, edgelight (top/bottom)

1.2.2. Power supply

AC/DC Power adapter: +16V DC/3.75A (100V~240V)  
Power consumption: 40 W (typical)  
Power cord length and type: 1.8M, USA type  
Power indicator : LED (On Green, Sleeping mode Amber)  
Auto power saving : EPA

1.2.3. Horizontal scan : 30~ 49KHz

1.2.4. Vertical scan : 56 - 62 Hz

1.2.5. Input signals

1. PC Signal type

Analog Video: 0.7 Vpp Linear, positive polarity  
Sync : TTL level, separate, positive or negative polarity

2. TV signal type

RF signal : Aerial input  
Video signal : Svideo input  
CVBS  
YPbPr

3. Audio signal : Svideo L/R, YPbPr L/R audio input  
PC line in

1.2.6 Input connectors

(1) Input analog Dsub connector pin assignment:

| PIN No. | SIGNAL               |
|---------|----------------------|
| 1       | Red                  |
| 2       | Green                |
| 3       | Blue                 |
| 4       | GND                  |
| 5       | GND                  |
| 6       | Red GND              |
| 7       | Green GND            |
| 8       | Blue GND             |
| 9       | +5V (Supply from PC) |
| 10      | Sync GND             |
| 11      | GND                  |
| 12      | Bi-directional data  |
| 13      | H-sync               |
| 14      | V-sync               |
| 15      | Data clock           |

Sync polarity :

-Hori.sync : positive/negative  
-Vert.sync : positive/negative

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1. General

1.1. Product description

This 20" LCD Monitor/TV is specified as a display peripheral with analog video signal input and include TV function with 20" TFT LCD display. Horizontal scan range is 30-40K Hz and refresh rate 56-62Hz.

This scan range allows it to display resolution up to 800\*600 non-interlaced at 60 Hz refresh rate. The image can be adjust through OSD control, these adjustments can be stored on a board memory including 8 factory pre-load modes.

1.2. Basic data

1.2.1 LCD panel

Type NR. :A201SN02 (AUO)  
Display area(mm) : 408(H) x 306(V) (20.1-inch diagonal)  
Display mode : TN type, Normal white + SWV film  
Number of Pixels : 800(H) x 600(V)  
Pitch ( mm ) : 0.51(H) x 0.51(V)  
Color pixel arrangement : RGB vertical stripes  
Display mode : normally white TN  
Number of color : 16.7M ( 8 bits)  
Brightness (cd/m^2) : 450nit(typ.)  
Viewing angle : -80 ° ~ 80 °(H), -60° ~ 60 °(V)(Typ.)  
Response time : 16ms typ. (Tr+Tf)  
Surface treatment : Hard Coating + AR  
Electrical interface : TTL (1 port)  
Total module power(W) : 35W(typ.)  
Contrast ratio : Typical 500 : 1  
Overall dimension (mm) : 448(W) x 347(H) x 23(D)(max.)  
Module weight (g) : 3500  
Backlight : 6 CCFL

\*\*Income inspection, please refer to panel specification.\*\*

1.2.2. Power supply

Power consumption : Operating 55 W (typical)  
Power cord length : 1.8M  
Power cord type : USA type  
Power indicator : LED (On: Green ,Sleeping mode: Amber )  
Auto power saving : EPA

1.2.3. Horizontal scan : 30 - 40KHz

1.2.4. Vertical scan : 56 - 62 Hz

1.2.5. Input signals

1.PC Signal type

Analog Video: 0.7 Vp-p Linear , positive polarity

Sync : TTL level , separate , positive or negative polarity

2.TV signal type

RF signal : Aerial input

Video signal : S -video input

CVBS

Y PbPr

3.Audio signal : S -video L/R ,YPbPr L/R audio input

PC line in

1.2.6 Input connectors

(1) Input analog D-sub connector pin assignment:

| PIN No. | SIGNAL               |
|---------|----------------------|
| 1       | Red                  |
| 2       | Green                |
| 3       | Blue                 |
| 4       | GND                  |
| 5       | GND                  |
| 6       | Red GND              |
| 7       | Green GND            |
| 8       | Blue GND             |
| 9       | +5V (Supply from PC) |
| 10      | Sync GND             |
| 11      | GND                  |
| 12      | Bi-directional data  |
| 13      | H-sync               |
| 14      | V-sync               |
| 15      | Data clock           |

Sync polarity :  
-Hori.sync positive/negative  
-Vert.sync positive/negative

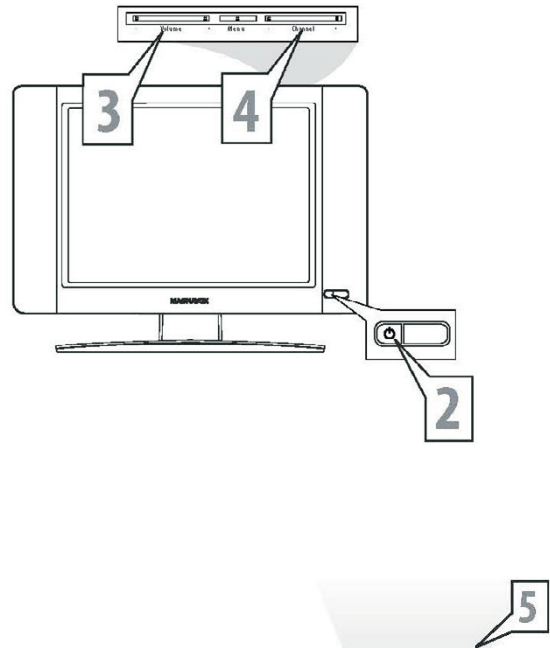
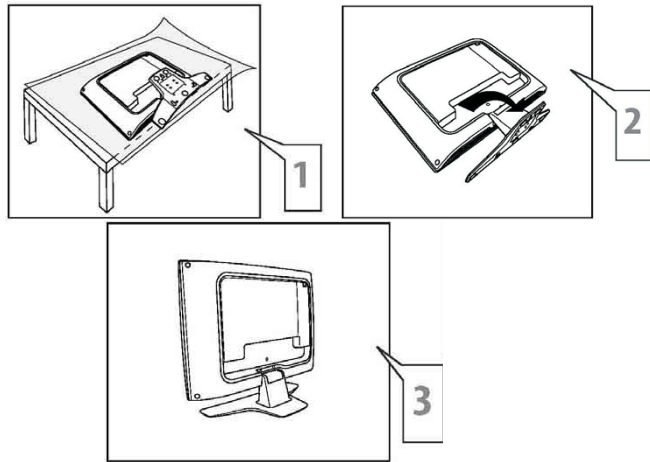


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## Before installation

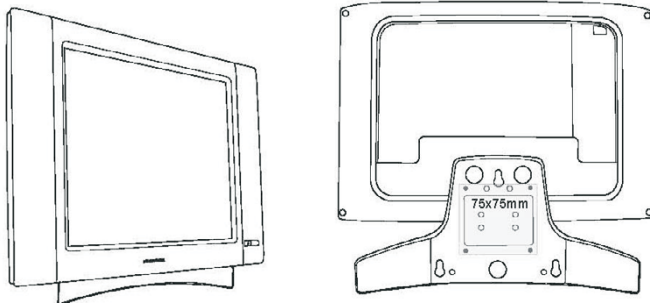
Before proceed to install your new LCD TV ,please follow the steps and diagrams as shown to familiarize yourself with the correct and safe way of unfolding the base.

1. Place the set facing down on a flat surface and a protective sheet.
2. Unfold the base following the direction as shown on the diagram.
3. Place the set upright, you LCD TV is now ready for install.



## INSTALLING LCD TV ON THE WALL

The stand of your LCD TV is comply with Standard VESA 75 standard, if you intend to install the LCD TV on the wall, please consult a professional technician for proper installing. The manufacture accepts no liability for installations not performed by a professional technician.

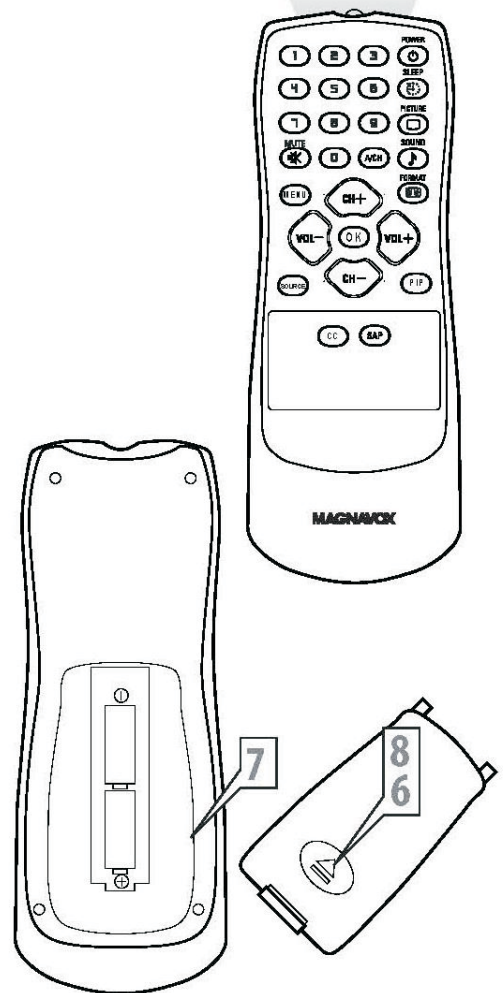


## Television and remote control

1. Plug the DC adapter into the DC IN 16V jack on the LCD TV. Plug the power cable into an outlet.
2. Press POWER to turn on the LCD TV.
3. Press VOLUME + to increase the sound level. Or, press VOLUME - to lower the sound level.
4. Press CH+ or CH- to select channels.
5. Point the remote control toward the front of the LCD TV when operating the LCD TV with the remote.

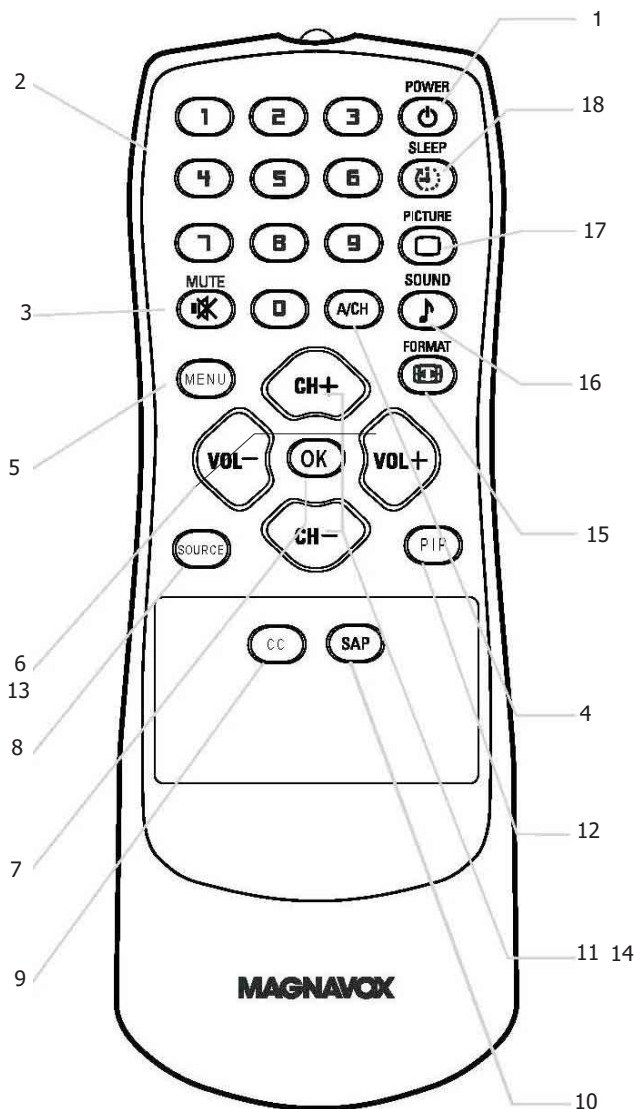
## Battery installation

6. Remove the battery compartment lid on the back of the remote.
7. Place two AAA batteries in the remote. Be sure the (+) and (-) ends of the batteries line up as marked inside the battery compartment.
8. Reattach the battery compartment lid.



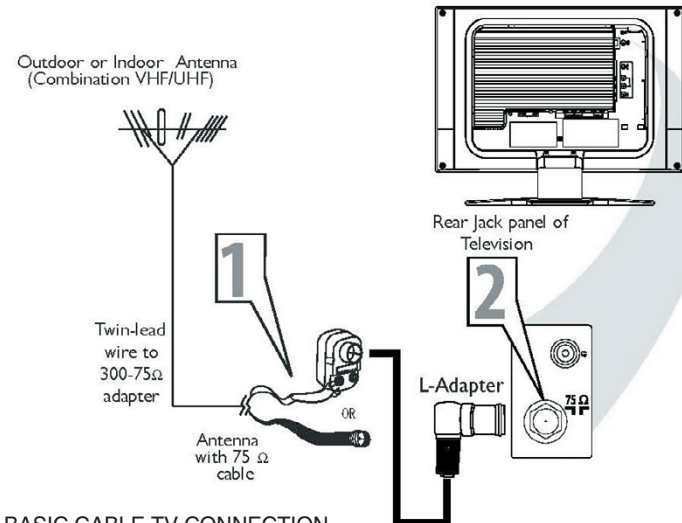
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- 1.Power : Power On/Standby
- 2.Numerica keys : (0-9) ,Channel setting
- 3.Mute : Sound mute function
- 4.Prev-CH : Recall previous CH
- 5.Menu : Main menu select and OK key
- 6.VOL- : Left/Volume Down
- 7.OK : OK
- 8.Source : Source select for PC,Tuner, CVBS,S-video,HD
- 9.Closed cap. : Closed caption on/off
- 10.SAP(2<sup>nd</sup> audio) : Sound select
- 11.CH- : Down/Channel Down
- 12.PIP : PIP size select (Small/Medium/Large/PBP)
- 13.VOL+ : Right/Volume Up
- 14.CH+ : Up/ Channel Up
- 15.Display Format : Select display format (4:3, Expand 4:3, Compress 16:9)
- 16.Smart Sound : Select sound effect (Personal/News/Music/Theatre)
- 17.Smart Picture : Select picture effect (Personal/Movie/Sports/weak signal/multimedia/Night)
- 18.Sleep Timer : Sleep timer 15,30,60,120,180,240 OFF



### ANTENNA CONNECTION

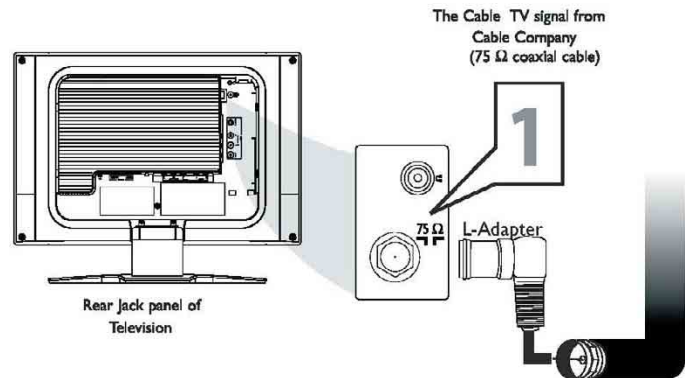
A combination antenna receives normal broadcast channels (VHF 2-13 and UHF 14-69). Your connection is easy because there is only one 75  $\Omega$  (ohm) antenna jack on the back of your TV, and that's where the antenna goes.



### BASIC CABLE TV CONNECTION

Your Cable TV signal into your home may be a single, 75  $\Omega$  (ohm) cable. If so, this connection is very simple. Follow the step below to connect your Cable TV signal to your new LCD TV.

1. Connect the Cable TV signal to one end of the supplied L-Adapter as shown, and connect the other end of the adapter to the TV jack on the LCD TV.



### CABLE BOX CONNECTIONS

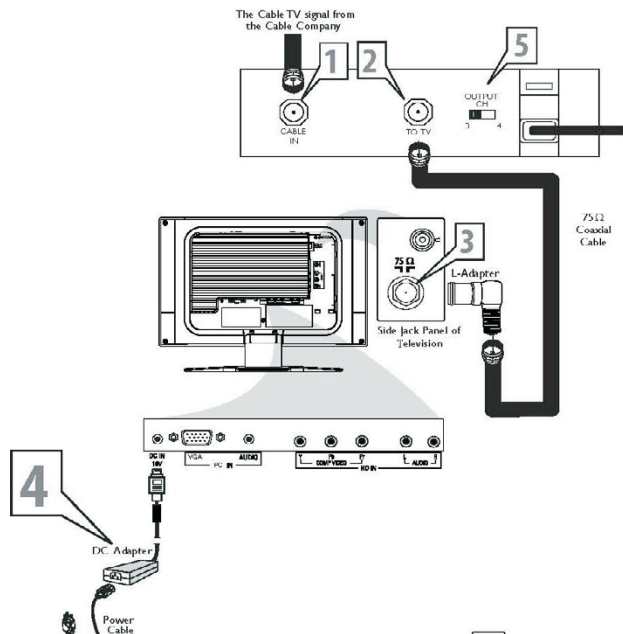
If you have a Cable Box, follow either set of these steps to complete your connections.

#### Cable Box with RF In/Out Jacks

This connection will not supply Stereo sound to the LCD TV.

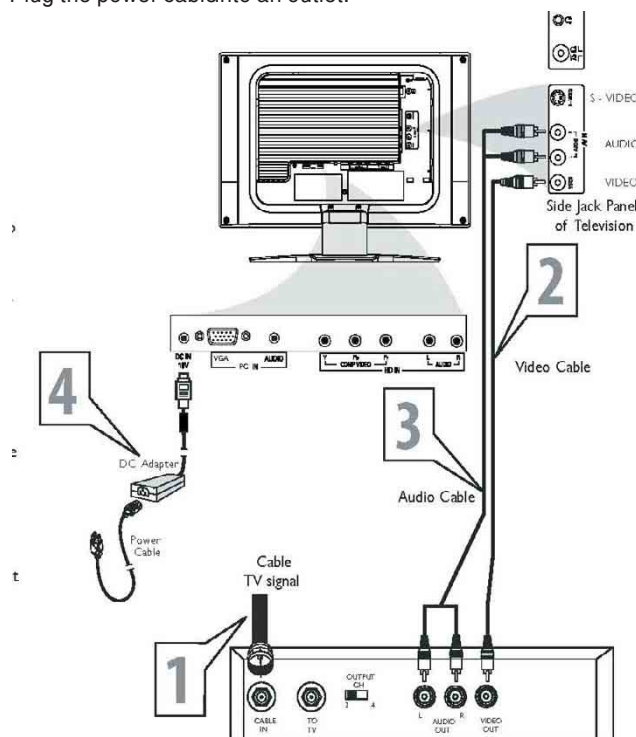
1. Connect the Cable TV signal to the IN jack (or RF IN or CABLE IN) on the Cable Box.
2. Connect an RF coaxial cable (not supplied) to the OUT jack (or TO TV or RF OUT) of the Cable Box.
3. Connect the other end of the coaxial cable to one end of the supplied L-Adapter as shown, and connect the other end of the adapter to the TV jack on the LCD TV.
4. Plug the DC adapter into the DC IN 16V jack on the LCD TV. Plug the power cable into an outlet.
5. Set the Channel 3/4 (or Output channel) switch of the Cable Box to 3 or 4. Set the TV to the same channel. When watching TV programming, change channels at the Cable Box, not the LCD TV.

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**Cable Box with Audio/Video Out Jacks** This connection will supply Stereo sound to the LCD TV.

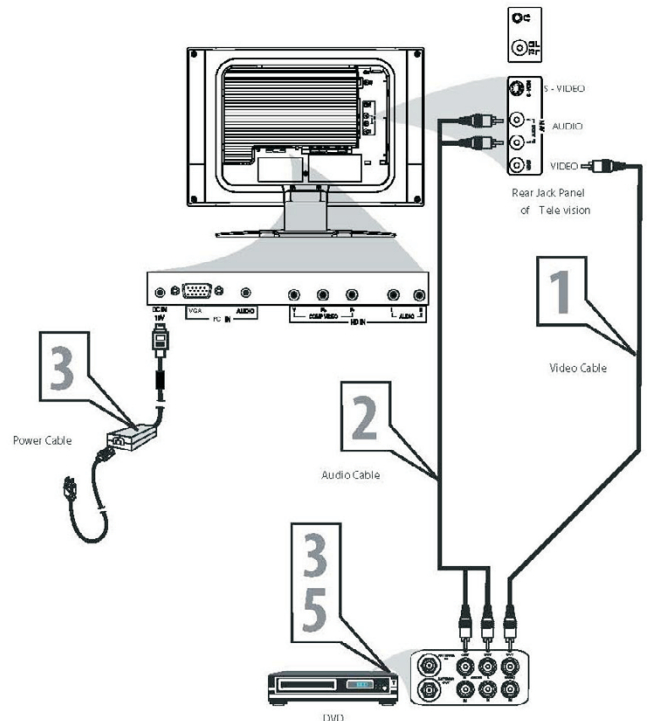
1. Connect the Cable TV signal to the IN jack (or RF IN or CABLE IN) on the Cable Box.
2. Using an RCA-type video cable (not supplied) connect one end of the Video cable to the Video Out jack of the Cable Box. Connect the other end of the cable to the yellow VIDEO jack on the side of the TV. Video cables are usually marked with yellow and are available from Magnavox or electronics retailers. Video jacks on most equipment are yellow.
3. Using RCA-type, stereo audio cables (not supplied), connect one end of the cable to the left and right Audio Out jacks of the Cable Box. Connect the other end of that cable to the Audio jack on the side of the LCD TV. Audio cables are usually marked with red and white and are available from Magnavox or electronics retailers. The right audio jack is red and the left audio jack is white. Match the cable colors to the jack colors.
4. Plug the DC adapter into the DC IN 16V jack on the LCD TV. Plug the power cable into an outlet.



## AUDIO/VIDEO INPUT CONNECTIONS

The AUDIO and VIDEO In jacks on the rear of the LCD TV enable quick connections of other equipment. Connect a VCR, DVD Player, Video Game, Camcorder, etc., to these jacks. To view the material playing on the other equipment, Set the LCD TV to its AV Mode.

1. Connect a RCA-style video cable (usually yellow or marked CVBS) to the VIDEO OUT jacks of the other equipment (DVD Player, Camcorder, etc.) and to the yellow VIDEO jack on the side of the LCD TV.
2. Connect RCA-style audio cables (usually red and white) to the AUDIO OUT (left and right) jacks on the other equipment. Connect the other end of the cables to the AUDIO jack on the side of the LCD TV.
3. Plug the DC Adapter into the DC IN 16V jack on the TV. Plug the power cable into an outlet. Turn on the TV and other equipment.
4. Press the Source button to set the TV to AV Mode.
5. Press PLAY on the other equipment to view its material on the TV.

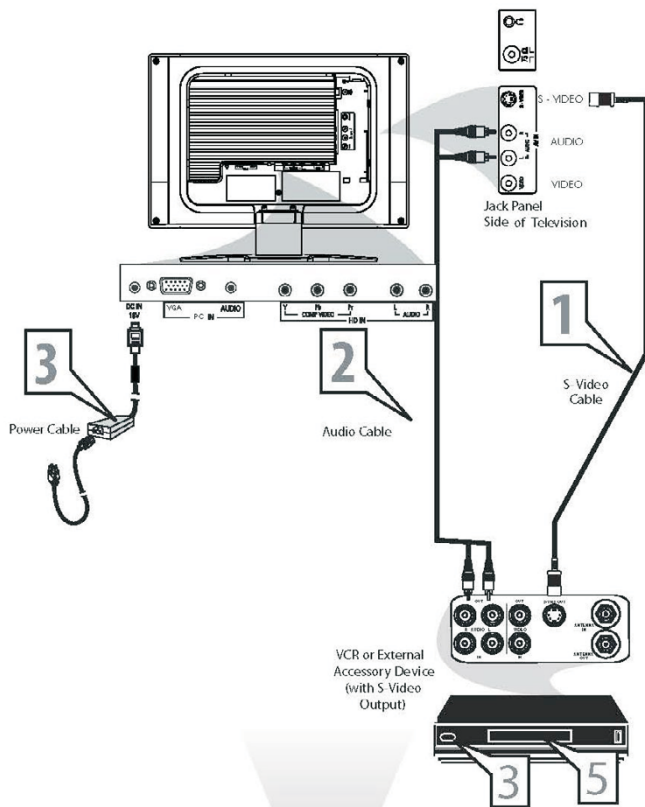


The S-Video connection on the rear of the LCD TV can provide you with better LCD picture detail and clarity for the playback of accessory sources such as DBS (digital broadcast satellite), DVD (digital video discs), video games, and VHS VCR (video cassette recorder) tapes than the normal antenna picture connections.

**Note:** The accessory device must have an S-VIDEO OUT (put) jack in order for you to complete the connection on this page.

1. Connect an S-Video cable to the S-VIDEO jack of the other equipment (DVD Player, Camcorder, etc.) and to the S-VIDEO jack on the rear of the LCD TV.
2. Connect RCA-style audio cables (usually red and white) to the AUDIO OUT (left and right) jacks on the other equipment. Connect the other end of the cables to the AUDIO jack on the side of the LCD TV.
3. Plug the DC Adapter into the DC IN 16V jack on the LCD TV. Plug the power cable into an outlet. Turn on the LCD TV and other equipment.
4. Press the Source button to set the LCD TV to its S-VIDEO mode.
5. Press PLAY on the other equipment to view its material on the LCD TV.

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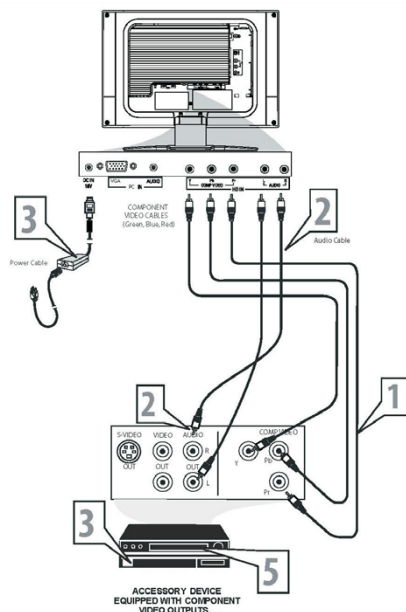


#### COMPONENT (YPbPr) CONNECTIONS

Component Video input provide the highest possible color and picture resolution in the playback of digital signal source material, such as with DVD players.

Note: The accessory device must have an component(YPbPr) output jack in order for you to complete the connection on this page.

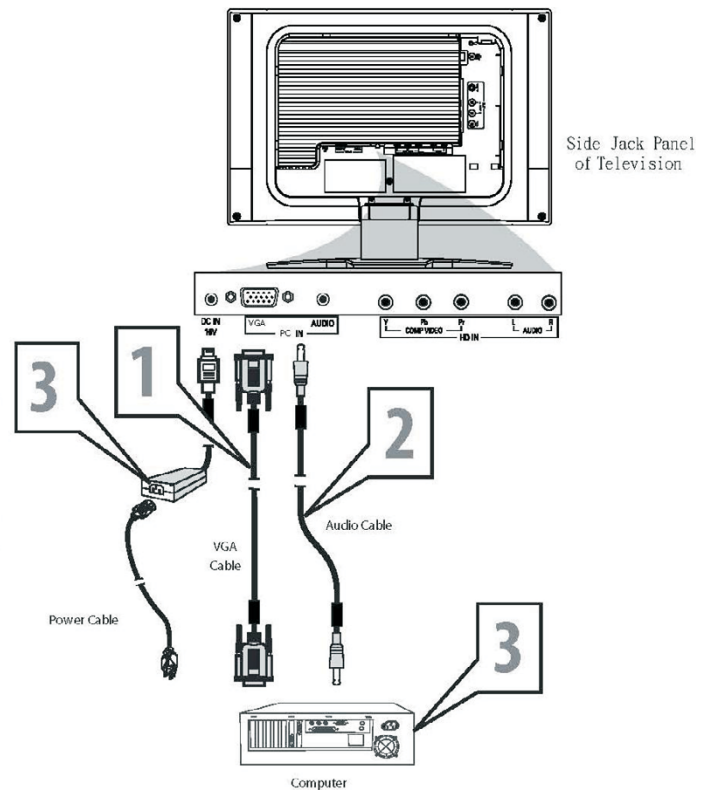
1. Connect the component (Y, Pb, Pr) Video OUT jacks from the DVD player(or similar device) to the COMP(onent) VIDEO Input jacks on the bottom of the LCD TV.
2. Connect the red and white AUDIO CABLES to the Audio (left and right) output jacks on the rear of the accessory device to the AUDIO IN jack. Connect the other end of the cable to the Audio jack on the rear of LCD TV.
3. Plug the DC Adapter into the DC IN 16 V jack on the LCD TV. Plug the power cable into an outlet. Turn on the LCD TV and other equipment.
4. Press the SOURCE button on the remote control to select HD. HD will appear in the upper left corner on the TV screen.
5. Insert a DVD disc into the DVD player and press the PLAY button on the DVD Player.



#### PC (MONITOR) CONNECTION

This LCD TV can be used as a PC . Your computer will have to be Equipped with a VGA type video output and VGA cable.

1. Connect one end of the VGA Video cable (not supplied) to the Monitor(video) output on the computer, while connecting the other ends to the VGA INPUT jack on the LCD TV.
2. Although audio connections are not required, the LCD TV can Reproduce the computers audio out by an AUDIO ADAPTER to the Audio output jack on the computer (if available) while connecting the other ends of the Audio cables to the PC AUDIO Jacks on the bottom of the TV.
3. Plug the DC Adapter into the DC IN 16V jack on the LCD TV. Plug the power cable into an outlet. Turn on the LCD TV and PC.
4. Press the SOURCE button until PC MODE appears on the screen.





# On Screen Display

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| PC MODE                      |  |  |  |           |
|------------------------------|--|--|--|-----------|
| 1st Layer                    | 2nd Layer  | 3rd Layer  |  |           |
| PICTURE                      |  |  |  |           |
|                              | SMART PICTURE  | NORMAL<br>WARM<br>COOL   |  |           |
|                              | BRIGHTNESS<br>CONTRAST                               |  |  |           |
|                              | AUTO ADJUST  | YES<br>IN PROGRESS<br>STORE?                                       | YES<br>NO                              |           |
|                              | MANUAL ADJUST  | PHASE<br>CLOCK<br>HORIZONTAL<br>VERTICAL                           |  |           |
| AUDIO                        |  |  |  |           |
|                              | SMART SOUND  | PERSONAL<br>NEWS<br>MUSIC<br>THEATRE                               |  |           |
|                              | SETTINGS   | TREBLE<br>BASS<br>BALANCE  |  |           |
|                              | STEREO   | STEREO   |  |           |
|                              |  |  |  |           |
|                              | VIRTUAL SURROUND                                     | VIRTUAL SURROUND<br>OFF  |  |           |
|                              | AVL  | YES<br>NO  |  |           |
| FEATURES                     |  |  |  |           |
|                              | PIP  | SIZE   | OFF<br>SMALL<br>MEDIUM<br>LARGE<br>PBP |           |
|                              |  | VIDEO  | TV<br>AV<br>S-VIDEO<br>COMPONENT       |           |
|                              |  | AUDIO  | PC<br>PIP                              |           |
|                              |  | DISPLAY  | ICON1<br>ICON2<br>ICON3<br>ICON4       |           |
|                              | SOURCE   | PC<br>TV<br>AV<br>S-VIDEO<br>HD                                    |  |           |
|                              |  |  |  |           |
| INSTALL                      |  |  |  |           |
|                              | LANGUAGE   | ENGLISH<br>FRAN AIS<br>ESPA OL                                     |  |           |
|                              | FACTORY RESET  | YES?   |  |           |
| TV / AV/ S-VIDEO / HDTV MODE |  |  |  |           |
| 1st Layer                    | 2nd Layer  | 3rd Layer  | 4th Layer                              | 5th Layer |
| PICTURE                      |  |  |  |           |
|                              | SMART PICTURE  | PERSONAL<br>MOVIES<br>SPORTS<br>WEAK SIGNAL<br>MULTIMEDIA<br>NIGHT |  |           |
|                              | BRIGHTNESS<br>CONTRAST<br>COLOR<br>SHARPNESS<br>TINT |  |  |           |
| AUDIO                        |  |  |  |           |
|                              | SMART SOUND  | PERSONAL<br>NEWS<br>MUSIC<br>THEATRE                               |  |           |

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|          |                   |                                    |   |  |  |
|----------|-------------------|------------------------------------|---|--|--|
| AUDIO    | SETTINGS          | TREBLE<br>BASS<br>BALANCE          |   |  |  |
|          | STEREO            | STEREO<br>SAP<br>MONO              |   |  |  |
|          | VIRTUAL SURROUND  | VIRTUAL SURROUND<br>OFF            |   |  |  |
|          | AVL               | YES<br>NO                          |   |  |  |
|          |                   |                                    |   |  |  |
| FEATURES |                   |                                    |   |  |  |
|          | SOURCE            | PC<br>TV<br>AV<br>S-VIDEO<br>HD    |   |  |  |
|          | PICTURE FORMAT    | 4:3<br>EXPAND 4:3<br>COMPRESS 16:9 |   |  |  |
|          | PICTURE ALIGNMENT |                                    |   |  |  |
|          | AUTO LOCK         | LOCK PROGRAM                       |   |  |  |
|          |                   | CHANGE CODE                        | YES   |  |  |
|          |                   | CLEAR ALL                          | ON<br>OFF   |  |  |
|          |                   | BLOCK OPTION                       | ON<br>OFF   |  |  |
|          |                   | MOVIE RATING                       | G<br>PG<br>PG13<br>R<br>NC17<br>X                                   | ON/OFF<br>ON/OFF<br>ON/OFF<br>ON/OFF<br>ON/OFF<br>ON/OFF |  |
|          |                   | TV RATING                          | TV Y  | ON/OFF   |  |
|          |                   |                                    | TV Y7   |  | BLOCK<br>FV                                    |
|          |                   |                                    | TV G  | ON/OFF   | ON/OFF   |
|          |                   |                                    | TV PG   |  | BLOCK<br>V<br>S<br>L<br>D                      |
|          |                   |                                    | TV 14   |  | ON/OFF<br>ON/OFF<br>ON/OFF<br>ON/OFF<br>ON/OFF |
|          |                   |                                    | TV MA   |  | BLOCK<br>V<br>S<br>L                           |
|          |                   |                                    |   |  | ON/OFF<br>ON/OFF<br>ON/OFF<br>ON/OFF           |
|          | CLOSED CAPTION    | CAPTION MODE                       | CC1<br>CC2<br>CC3<br>CC4<br>TXT1<br>TXT2<br>TXT3<br>TXT4<br>CC MUTE |  |  |
|          |                   | CC DISPLAY                         | ON<br>OFF   |  |  |
|          |                   |                                    |   |  |  |
| INSTALL  |                   |                                    |   |  |  |
|          | LANGUAGE          | ENGLISH<br>FRAN AIS<br>ESPA OL     |   |  |  |
|          | TUNER MODE        | ATENNA<br>CABLE<br>AUTO            |   |  |  |
|          | AUTO PROGRAM      | START?                             |   |  |  |
|          | CHANNEL EDIT      | CHANNEL                            |   |  |  |
|          |                   | SKIPPED                            | ACTIVE<br>SKIPPED   |  |  |
|          | MANUAL FINE TUNE  |                                    |   |  |  |
|          | FACTORY RESET     | YES?                               |   |  |  |



### NO VIDEO INPUT

This screen appears if there is no video signal input. Please check that the signal is properly connected to the video card of PC and make sure PC is on



### Access Aging.. Mode

- Step 1 : Select the source "PC" and then turn off LCD-TV, and disconnect Interface Cable between Monitor and PC.
- Step 2 : [Push "power " button and then push the "VOL- " and "VOL+" buttons at the same time immediately and hold it] untill comes out " AGING screen" then release all buttons.

Bring up:



After 55 seconds, bring up:



After 5 seconds, bring up:



After 55 seconds, bring up:



-----  
-----

repeatly  
Connect Signal cable again=> go back to normal display

## Warning Message

### ◀◀ Go to cover page

1. Automatic adjustment (for factory only)

Press Volume+ and Volume- on front key at the same time (PC mode only). It adjusts PC image to the best and save the screen automatically.

2. OUT OF RANGE

If PC input timing is out of range, it shows "OUT OF RANGE " warning message on the center of the screen. The range of horizontal frequency is between 14 - 63 KHz. The range of vertical frequency is between 45 - 76 Hz. The OSD won't timeout.

3. NO VIDEO INPUT

When PC input timing has either horizontal frequency or vertical frequency. Or neither has horizontal frequency nor vertical frequency. It shows on the center of the screen for 30 seconds, then it will enter sleep mode.

Go to cover page

Access factory. Mode  
how to get into factory mode menu  
Step 1 : Select the source "PC" and then turn off LCD-TV.

Step 2 : [Push "power " button and then push the "VOL- " and "VOL+" buttons at the same time immediately and hold it] about five seconds then release all buttons.

Press "menu"button and bring up factory mode indication as shown in Fig.1

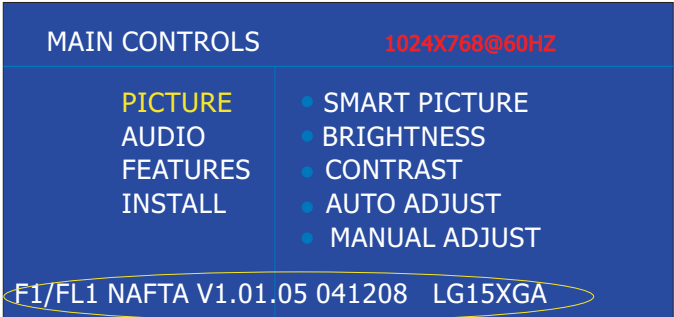


Fig.1

Use the CHNNEL- and CHNNEL+ to select the "F1/FL1 NAFTA V1.01.05 041208 LG15XGA" and then press the "VOL +" button



| Menu Item               | Description  |
|-------------------------|--|
| Scalar Gain R G B       | Scalar Gain for Normal/Warm/Cool in PC mode.                   |
| Auto-Color              | Adjust color from received signal (either in PC or HDTV mode). |
| ADC Offset R G B        | Adjust AD 9883 for PC ADC offset.                              |
| ADC Gain R G B          | Adjust AD 9883for PC ADC gain.                                 |
| PC Offset R G B         | PC analog scalar offset.                                       |
| 711X SDTV Brightness    | Adjust SA 7119 SDTV brightness.                                |
| 711X SDTV SAT.          | Adjust SA 7119 SDTV saturation.                                |
| 711X SDTV Contrast      | Adjust SA 7119 SDTV contrast.                                  |
| 711X SDTV TINT          | Adjust SA 7119 SDTV tint (hue).                                |
| TV Shift H V            | Adjust TV screen position horizontally/vertically.             |
| HD Shift H V            | Adjust HDTV screen position horizontally/vertically.           |
| Show Lock Message       | Show OSD lock message.   |
| HDTV ADC Offset R G B   | Adjust AD 9883 for HDTV ADC offset.                            |
| HDTV ADC Gain R G B     | Adjust AD 9883 for HDTV ADC gain.                              |
| Video Scalar Gain R G B | Adjust scalar gain for Video mode.                             |
| Scalar Hue              | Adjust scalar hue.   |

**◀◀ Go to cover page****No Power**

.Check the TV power cord. Disconnect the power cord from the power outlet for 10 seconds, then reinsert the plug into the outlet.

Press POWER to turn on the TV again.

.Make sure the outlet is not on a wall switch.

.Make sure a fuse has not blown at the power outlet.

**No Picture**

.Check the antenna or Cable TV connections. Connect the antenna or Cable TV signal securely to the TV's 75ohm jack on the rear of the TV.

.Set TUNER MODE correctly. Details are on page 15.

.Activate AUTO PROGRAM to find all available channels.

In case you hear only sound and don't see any picture in S-Video or Video (CVBS) mode. Please check if you have connected Video signal to S-Video or Video (CVBS) input. Only one of the two video inputs can be connected to sound. This means that the same sound can be heard in S-Video and Video (CVBS) mode.

**No Sound**

.Press the VOL+ and VOL- buttons to adjust the volume.

.Press the MUTE button on the remote control to cancel or restore the volume.

.If you have connected other equipment to the TV (such as a VCR or DVD Player), make sure the audio cables are connected securely between the TV and the other equipment.

.Check the SOUND settings.

.In case you hear wrong sound in S-Video or Video (CVBS) mode.

Please check if you have connected the right sound signal to AV in (S-Video or Video input). Only one of the two video inputs can be connected to sound, but both video signals can be connected.

This means that only one of the two sound inputs can be heard in S-Video and Video (CVBS) mode.

**Remote Control does not work.**

.Check the batteries. If necessary, replace them with two AAA heavy duty (zinc chloride) or alkaline batteries.

.Clean the remote control as well as the remote control sensor on the front of the TV.

.Check the TV power cord. Disconnect the power cord from the power outlet for 10 seconds, then reinsert the plug into the outlet. Press POWER to turn on the TV again.

.Make sure the outlet is not on a wall switch.

.Make sure a fuse has not blown at the power outlet.

.Always point the remote control toward the front of the TV (toward the remote sensor).

.Make sure that you use the supplied Magnavox Remote control, only the supplied Magnavox Remote control can be used with this LCD-TV set.

TV displays wrong channel or no channels.

.Repeat channel selection.

.Add the channel number(s) into the TV's memory. Use STORE.

.Make sure TUNER MODE is set correctly.

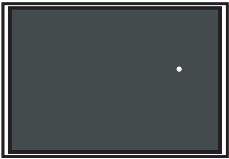
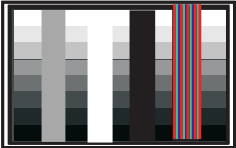

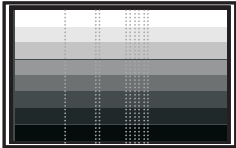
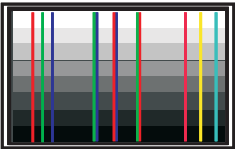

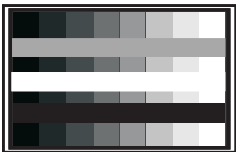

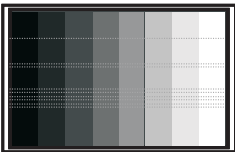

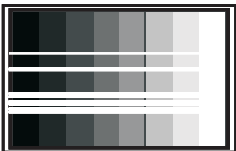
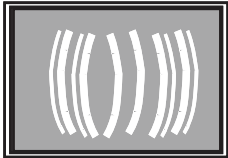
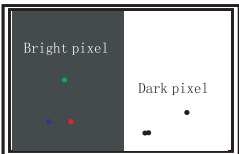

Then activate AUTO PROGRAM to set up all available channels.

# Failure Mode Of Panel

Go to cover page

Quick reference for failure mode of LCD panel

this page presents problems that could be made by LCD panel.  
It is not necessary to repair circuit board. Simply follow the mechanical instruction on this manual to eliminate failure by replace LCD panel.

| Failure description                                | Phenomenon  |  |   |
|--|---|--|---|
|  |   | Polarizer has bubbles  |    |
| Vertical block defect                              |    | Polarizer has bubbles  |    |
| Vertical dim lines                                 |    |  |   |
| Vertical lines defect<br>(Always bright or dark)   |   | Foreign material inside polarizer. It shows liner or dot shape.              |    |
| Horizontal block defect                            |  | Concentric circle formed   |  |
| Horizontal dim lines                               |  | Bottom back light of LCD is brighter than normal                             |  |
| Horizontal lines defect<br>(Always bright or dark) |  | Back light un-uniformity   |  |
| Has bright or dark pixel                           |  | Backlight has foreign material. Black or white color, liner or circular type |  |





Front view



Fig.1

Back view, remove the cover as Fig.2



Remove the base:  
unscrew the screws as Fig.3



Fig.3

Remove the back cover,  
unscrew the screws as Fig.4 and the open the  
clicks and then remove the back cover as Fig.5 Fig.6 Fig.7



Fig.4



Fig.5



Fig.6

Fig.2



Fig.7

Remove the Matel frame board

- Remove the five screws
- Remove the matel frame board as shown in Fig.8



Fig.8

Remove the inverter board ,YPbPr-in and scaler board  
unscrew the screws and disconnect the connector as shown in Fig.9

◀◀ Go to cover page



Fig.9



Fig.10

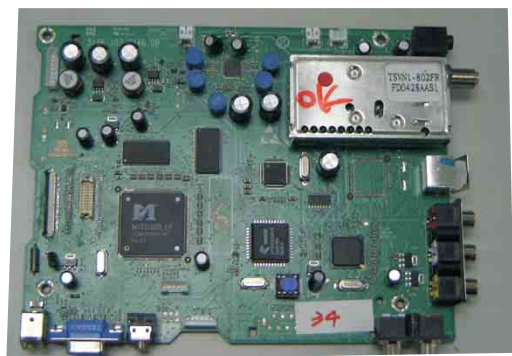


Fig.11

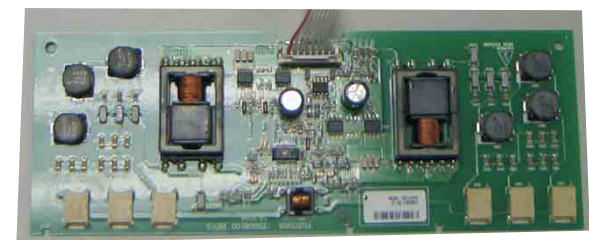


Fig.12

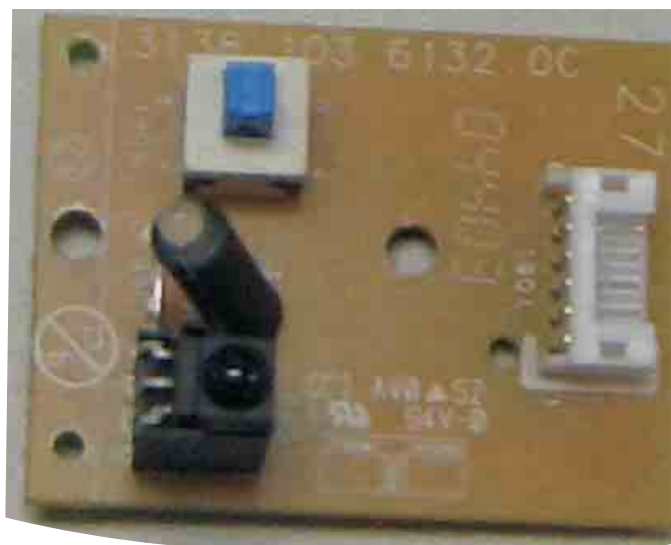


Fig.13



Fig.14

Go to cover page

1.General points

- 1.1 During the test and measuring, supply a distortion free AC mains Voltage to the apparatus via an isolated transformer with low Internal resistance.
- 1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 -264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)
- 1.3 All voltages are to be measurement or applied with respect to ground, unless otherwise stated.
- 1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.
- 1.5 All values mentioned in these test instruction are only applicable of a Well aligned apparatus, with correct signal.
- 1.6 The letters symbols (B) and (S) placed behind the test instruction Denotes (B): carried out 100% inspection at assembly line (S): carried out test by sampling
- 1.7 The white balance (color temperature), has to be tested in subdued Lighted room.
- 1.8 Repetitive power on/off cycle are allowed except it should be avoided within 6 sec.

2. Input signal

2.1.1 PC Signal type

- Analog Video : 0.7 Vp-p linear, positive polarity
- Separate Sync. : TTL level, separate, positive or negative polarity
- Audio signal : Mini-jack audio input
- Input level: 500 mVrms ((Speaker output 3W when Input level > 630mVrms and Volume control at 100%))
- Signal source: pattern generator format as attachment (table 1 to 11) Reference generator : CHROMA 2200 or 2250

2.1.2 TV Signal type

- RF Signal : Aerial input, NTSC cable and antenna system.
- Video signal : Cinch input, CVBS with NTSC and PAL system.
  - Level: 1.0Vp-p (0.7V video + 0.3V sync.)
  - S video input: Y/C signal, NTSC and PAL system.
    - Level: Y: 1.0Vp-p (0.7V video + 0.3V sync.)
    - C: +/- 0.3V.
- Component input: Cinch G/B/R-> YPbPr cinch input.
  - Level: Y: 1.0Vp-p Pb/Pr: +/- 0.35V
- Audio signal : Side cinch R/L for CVBS and S-video
  - Bottom cinch R/L for component input.
- Input level: 500 mVrms ((Speaker output 3W when Input level > 630mVrms and Volume control at 100%))

2.2 PC Input signal mode

PRE-LOAD VIDEO RESOLUTION

Mode 3, 6, 7, 10 are preset modes that should pass QA inspection. Mode 1, 2, 4, 5, 8, 9, 11 will run auto adjustment only, and W/O QA checking.

| Dot rate (MHz) |        | H.freq (KHz) | Mode      | Resolution | V.freq (Hz) |
|----------------|--------|--------------|-----------|------------|-------------|
| 1              | 25.175 | 31.469       | IBM VGA   | 640 * 350  | 70.087      |
| 2              | 28.322 | 31.469       | IBM VGA   | 720 * 400  | 70.087      |
| 3              | 25.175 | 31.469       | IBM VGA   | 640 * 480  | 59.940      |
| 4              | 30.240 | 35.000       | MACINTOSH | 640 * 480  | 66.667      |
| 5              | 31.500 | 37.500       | VESA      | 640 * 480  | 75.000      |
| 6              | 36.000 | 35.156       | VESA      | 800 * 600  | 56.250      |
| 7              | 40.000 | 37.879       | VESA      | 800 * 600  | 60.317      |
| 8              | 49.500 | 46.875       | VESA      | 800 * 600  | 75.000      |
| 9              | 57.300 | 49.700       | MACINTOSH | 832 * 624  | 75.000      |
| 10             | 65.000 | 48.363       | VESA      | 1024 * 768 | 60.004      |
| 11             | 78.750 | 60.023       | VESA      | 1024 * 768 | 75.029      |

2.3 TV input signal Channel and pattern for Nafta model (Table1)  
Signal Distribution Table ( NTSC)

| CH   | Frequency Carriers |           | TV System | Pattern          |
|------|--------------------|-----------|-----------|------------------|
|      | Video              | Sound     |           |                  |
| A 03 | 61.25MHz           | 65.75MHz  | NTSC M    | Color Circle     |
| A 06 | 83.25MHz           | 87.75MHz  | NTSC M    | Red Raster       |
| A 09 | 187.25MHz          | 191.75MHz | NTSC M    | Circle Pattern   |
| A 11 | 199.25MHz          | 203.75MHz | NTSC M    | Cross Hatch      |
| A 13 | 211.25MHz          | 215.75MHz | NTSC M    | Two White Window |
| A 52 | 699.25MHz          | 703.75MHz | NTSC M    | Color Bar        |
| A 69 | 801.25MHz          | 805.75MHz | NTSC M    | 100% White       |
| C 70 | 499.25MHz          | 503.75MHz | NTSC M    | Checkerboard     |

Table 1

3. TV mode display adjust ment

3.1 White balance adjustment (B)

- General set-up :
- Equipment Requirements: Color analyzer.
- Input requirements:
- Input Signal Type : CVBS-NTSC signal.
- Frequency = 187.25 MHz (CH. 9).
- Alignment method:
- Initial Set-up :
- Set TV (7119) Brightness=124; Contrast=64, Saturate= 70 in Factory mode (can be fine tuned)
- Set Smart picture as "Personal "(Brightness=50, Color=50, Contrast=50)
- Apply" 100% Full White/100IRE" pattern by TV pattern generator.
- Alignment : Adjust the VIDEO SCALER GAIN R G B in Factory Mode
- NORMAL . (See Fig 1.)

[ Enter factory menu : press Volume - and Volume + keys together around six seconds]

The 1931 CIE chromaticity (X, Y) co-ordinates shall be:

| Picture Mode      | X             | y             |
|-------------------|---------------|---------------|
| Normal (Original) | 0.289 ± 0.005 | 0.304 ± 0.005 |

Table3.1: Readings with Minolta CA110.

Go to cover page

| FACTORY ADJUST MENU        |  |       |  |
|----------------------------|--|-------|--|
| NORMAL                     |  |       |  |
| SCALER GAIN    R G B       |  |       |  |
| AUTO-COLOR (OK)            |  |       |  |
| ADC OFFSET    R G B        |  |       |  |
| ADC GAIN      R G B        |  |       |  |
| PC OFFSET     R G B        |  |       |  |
| 7119 SDTV    SAT    TINT   |  |       |  |
| TV    SHIFT    H V         |  |       |  |
| HD    SHIFT    H V         |  |       |  |
| SHOW LOCK MESSAGE          |  |       |  |
| HDTV ADC OFFSET    R G B   |  |       |  |
| HDTV ADC GAIN      R G B   |  |       |  |
| VIDEO SCALER GAIN    R G B |  |       |  |
| SCALER HUE                 |  |       |  |
| EXIT                       |  | Value |  |

Fig.1

4. PC mode display adjustment

4.1 Display quality adjustment

Use timing mode as describe in 2.2, and use the POPO (pixel on pixel off) pattern to adjust the clock until no stripe and adjust the phase until clear picture. (AUTO ADJUST hot key press Volume- and Volume+ keys together for 1 second.)

Check all preset 4 modes.

4.2 WHITE-D adjustment (B)

4.2.1 At factory mode apply 024X768/60Hz mode with 64 gray pattern.

Set main controls Brightness at 50% and Contrast to 50%.  
Select AUTO-COLOR function for ADC OFFSET and ADC GAIN setup.  
4.2.2 Set smart picture as "NORMAL"  
Set SCALER GAIN R G B= VIDEO SCALER GAIN R G B (alignment done).

The 1931 CIE chromaticity (X, Y) coordinates shall be:

|            |                  |
|------------|------------------|
|            | Normal/ (8500°K) |
| x (center) | 0.289 ± 0.030    |
| y (center) | 0.304 ± 0.030    |

Readings with Minolta CA 110.

4.2.3 Set Smart picture as WARM , and COOL The SCALER GAIN RG B =

|        |   |       |       |
|--------|---|-------|-------|
|        | Normal/ the R\G\B are gain after alignment. | WARM  | COOL  |
| R gain | R'  | R'    | R'-10 |
| G gain | G'  | G'-10 | G'-10 |
| B gain | B'  | B'-10 | B'    |

4.3 Check the analog interface cable

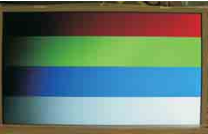
Check the color poor & noise condition of 64 gray pattern.

5. HDTV mode display adjustment

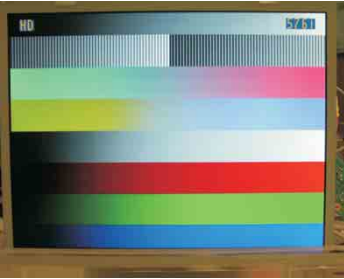
5.1 White balance adjustment (B)

General set-up:

Equipment : Quantum Data Pattern Generator 801GD or 802G.  
Apply 1080i, RGBW gray pattern.



(Or FLUKE 54200, apply 576i, DIGITAL SCAN/DIGI\_ADC1 pattern.)



Alignment method:  
Initial Setup : Set Smart picture as Personal, Brightness=50, Color=50, Contrast=50  
Alignments : Check chromaticity (X, Y) coordinates specification:




| Picture Mode | x             | y             |
|--------------|---------------|---------------|
| Personal     | 0.289 ± 0.020 | 0.304 ± 0.020 |

If out of specification, fine-tune HDTV ADC Gain in factory mode.

6. Preset EEPROM data

6.1 EEPROM data has to be preset data according following table.

Factory mode preset.

| Function            |  | Preset value |                    |     |
|---------------------|--|--------------|--------------------|-----|
| SCALER GAIN         |  | 127          | 127                | 127 |
| ADC Offset R/G/B    |  | 127          | 127                | 127 |
| ADC Gain R/G/B      |  | 127          | 127                | 127 |
| PC OFFset R/G/B     |  | 127          | 127                | 127 |
| 7119                |  brightness | 124          | (TV,AV,S-video,HD) |     |
| 7119                |  Saturation | 64           | (TV,AV,S-video,HD) |     |
| 7119                |  contrast   | 70           | (TV,AV,S-video,HD) |     |
| 7119                | TINT   | 24           | (TV,AV,S-video,HD) |     |
|                     |  | NTSC         |                    | PAL |
| TV shift H          | Regular  | 170          |                    | 181 |
| TV shift V          |  | 20           |                    | 22  |
| HD SHIFT H          |  | See below.   |                    |     |
| HD SHIFT V          |  |              |                    |     |
| HD ADC OFFset R G B |  | 127          | 127                | 127 |
| HD ADC GAIN R G B   |  | 127          | 127                | 127 |
| Video Scaler Gain   |  | 127          | 127                | 127 |
| Scaler Hue          |  | 50           |                    |     |

Factory mode:

|            |       |       |       |       |            |            |             |             |
|------------|-------|-------|-------|-------|------------|------------|-------------|-------------|
|            | 480 i | 480 P | 576 i | 576 P | 720P/50 Hz | 720P/60 Hz | 1080i/50 Hz | 1080i/60 Hz |
| HD shift H | 153   | 153   | 166   | 166   | 110        | 144        | 82          | 82          |
| HD shift V | 39    | 43    | 50    | 53    | 42         | 39         | 59          | 61          |

In user Picture alignment

|            |       |       |       |       |            |            |             |             |
|------------|-------|-------|-------|-------|------------|------------|-------------|-------------|
|            | 480 i | 480 P | 576 i | 576 P | 720P/50 Hz | 720P/60 Hz | 1080i/50 Hz | 1080i/60 Hz |
| HD shift H | 62    | 62    | 59    | 59    | 9          | 0          | 16          | 16          |



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6.2 Smart picture &Smart sound:  
6.2.1 Final TV mode out box setting.  
Smart Picture : Sport

Smart Picture

|             |            |    |
|-------------|------------|----|
| PERSONAL    | BRIGHTNESS | 50 |
|             | COLOR      | 50 |
|             | CONTRAST   | 50 |
|             | SHARPNESS  | 25 |
|             | TINT       | 50 |
| MOVIES      | BRIGHTNESS | 46 |
|             | COLOR      | 60 |
|             | CONTRAST   | 55 |
|             | SHARPNESS  | 25 |
|             | TINT       | 50 |
| SPORTS      | BRIGHTNESS | 50 |
|             | COLOR      | 65 |
|             | CONTRAST   | 46 |
|             | SHARPNESS  | 36 |
|             | TINT       | 50 |
| WEAK SIGNAL | BRIGHTNESS | 45 |
|             | COLOR      | 30 |
|             | CONTRAST   | 40 |
|             | SHARPNESS  | 15 |
|             | TINT       | 50 |
| MULTIMEDIA  | BRIGHTNESS | 50 |
|             | COLOR      | 58 |
|             | CONTRAST   | 60 |
|             | SHARPNESS  | 20 |
|             | TINT       | 50 |
| NIGHT       | BRIGHTNESS | 50 |
|             | COLOR      | 55 |
|             | CONTRAST   | 45 |
|             | SHARPNESS  | 20 |
|             | TINT       | 50 |

Smart Sound : Personal  
SOUND VOLUME : 15  
BASE : 50  
TREBLE : 50  
Balance : 0  
Virtuel SURROUND: OFF  
AVL : NO

Smart sound

|          |         |    |
|----------|---------|----|
| PERSONAL | TREBLE  | 50 |
|          | BASS    | 50 |
|          | BALANCE | 0  |
| NEWS     | TREBLE  | 45 |
|          | BASS    | 60 |
|          | BALANCE | 0  |
| MUSIC    | TREBLE  | 65 |
|          | BASS    | 60 |
|          | BALANCE | 0  |
| THEATRE  | TREBLE  | 70 |
|          | BASS    | 70 |
|          | BALANCE | 0  |

TIMING FOR F1 15" TFT XGA COLOR LCD MONITOR  
(VESA monitor timing standard Version 1.0 Release 0.7)  
REFERENCE PATTERN GENERATOR : CHROMA 2200 or2250  
TABLE 1: 31.469 KHz/70.087Hz, 640 X 350, pixel=25.175 MHz  
Horizontal Vertical

|  |   |
|--|---|
| Frame border=0<br>Total size =31.778 μs<br>Display size=25.422 μs<br>Rear porch= 1.907 μs<br>Sync width= 3.813 μs<br>Sync polarity=+ | Frame border=0<br>Total size =14.268 ms<br>Display size=11.122 ms<br>Rear porch= 1.907 ms<br>Sync width= 0.064 ms<br>Sync polarity= – |
| TABLE 2: 31.469 KHz/70.087Hz, 7 20 X 400, pixel=28.322 MHz<br>Horizontal Vertical  |   |

|  |   |
|--|---|
| Frame border=0<br>Total size =31.778 μs<br>Display size=25.422 μs<br>Rear porch= 1.907 μs<br>Sync width= 3.813 μs<br>Sync polarity=– | Frame border= 0<br>Total size =14.268 ms<br>Display size=12.711 ms<br>Rear porch= 1.112 ms<br>Sync width= 0.064 ms<br>Sync polarity=+ |
| TABLE 3: 31.469 KHz/59.940Hz, 640 X 480, pixel=25.175 MHz<br>Horizontal Vertical   |   |

|  |  |
|--|--|
| Frame border=0<br>Total size =31.778 μs<br>Display size=25.422 μs<br>Rear porch= 1.907 μs<br>Sync width= 3.813 μs<br>Sync polarity=– | Frame border=0<br>Total size =16.683 ms<br>Display size=15.253 ms<br>Rear porch= 1.049 ms<br>Sync width= 0.064 ms<br>Sync polarity=– |
|--|--|

TABLE 4: 35.000 KHz/66..667Hz, 640 X 480, pixel=30.240 MHz  
Horizontal Vertical

|  |  |
|--|--|
| Frame border=0<br>Total size =28.571 μs<br>Display size=21.164 μs<br>Rear porch= 3.175 μs<br>Sync width= 2.116 μs<br>Sync polarity=– | Frame border=0<br>Total size =15.000 ms<br>Display size=13.714 ms<br>Rear porch= 1.114 ms<br>Sync width= 0.086 ms<br>Sync polarity=– |
|--|--|

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TABLE 5: 37.500 KHz/75.000Hz, 640 X 480, pixel=31.500 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=26.667µs   | Total size=13.333 ms   |
| Display size=20.317µs | Display size=12.800 ms |
| Rear porch= 3.810µs   | Rear porch= 0.427 ms   |
| Sync width= 2.032µs   | Sync width= 0.080 ms   |
| Sync polarity=        | Sync polarity=         |

TABLE 6: 35.156 KHz/56.250Hz, 800 X 600, pixel=36.000 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=28.444µs   | Total size=17.778 ms   |
| Display size=22.222µs | Display size=17.067 ms |
| Rear porch= 3.556µs   | Rear porch= 0.626 ms   |
| Sync width= 2.000µs   | Sync width= 0.057 ms   |
| Sync polarity=        | Sync polarity=         |

TABLE 7: 37.879 KHz/60.317Hz, 800 X 600, pixel=40.000 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=26.400µs   | Total size=16.579 ms   |
| Display size=20.000µs | Display size=15.840 ms |
| Rear porch= 2.200µs   | Rear porch= 0.607 ms   |
| Sync width= 3.200µs   | Sync width= 0.106 ms   |
| Sync polarity=        | Sync polarity=         |

TABLE 8: 46.875 KHz/75.000Hz, 800 X 600, pixel=45.500 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=21.333µs   | Total size=13.333 ms   |
| Display size=16.162µs | Display size=12.800 ms |
| Rear porch= 3.232µs   | Rear porch= 0.448 ms   |
| Sync width= 1.616µs   | Sync width= 0.064 ms   |
| Sync polarity=        | Sync polarity=         |

TABLE 9: 49.722 KHz/74.546Hz, 832 X 624, pixel=57.280 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=20.110µs   | Total size=13.410 ms   |
| Display size=14.520µs | Display size=12.550 ms |
| Rear porch= 3.910µs   | Rear porch= 0.784 ms   |
| Sync width= 1.117µs   | Sync width= 0.060 ms   |
| Sync polarity=        | Sync polarity=         |

TABLE 10: 48.363 KHz/60.004Hz, 1024 X 768, pixel=65.000 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=20.677µs   | Total size=16.666 ms   |
| Display size=15.754µs | Display size=15.880 ms |
| Rear porch= 2.462µs   | Rear porch= 0.600 ms   |
| Sync width= 2.092µs   | Sync width= 0.124 ms   |
| Sync polarity=        | Sync polarity=         |

TABLE 11: 60.023 KHz/75.029Hz, 1024 X 768, pixel=78.750 MHz

| Horizontal            | Vertical               |
|-----------------------|------------------------|
| Frame border=0        | Frame border=0         |
| Total size=16.660µs   | Total size=13.328 ms   |
| Display size=13.003µs | Display size=12.795 ms |
| Rear porch= 2.235µs   | Rear porch= 0.466 ms   |
| Sync width= 1.219µs   | Sync width= 0.050 ms   |
| Sync polarity=        | Sync polarity=         |



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Display adjustment

Access factory. Mode  
how to get into factory mode menu  
Step 1 : Select the source "PC" and then turn off LCD-TV.

Step 2 : [Push "power " button and then push the "VOL- " and "VOL+" buttons at the same time immediately and hold it] about five seconds then release all buttons.

Press "menu"button and bring up factory mode indication as shown in Fig.1



Fig. 1

Use the CHNNEL- and CHNNEL+ to select the "F1/FL1 NAFTA V1.01.05 041208 LG15XGA" and then press the "VOL +" button



Fig.2

PC mode WHITE-D adjustment (B)

1 Apply 1024X768/60Hz mode with 5 block pattern as Fig 3. Set main controls brightness control at 50% and contrast to 50% on User mode. Set color setting at natural color on User mode. Move cursor to "AUTO-color" item on factory mode, press "menu" key to active this function, then scaler will adjust RGB and Color RGB automatically by it self.

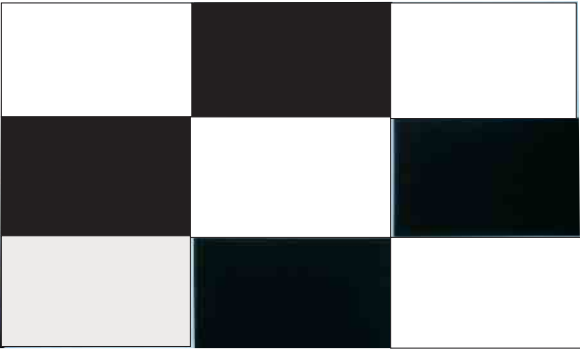


Fig.3

2. Apply a 1024x768/60Hz signal with white pattern.Set brightness control at 50% and contrast control at 50%. Adjust the R.G.B gain to reach special color temperature on center of screen.

2.1 Aim the probe CA-A30 at the center of screen as Fig. 4

2.2 Remove the lens protective cover of probe CA-A30.

2.3 Set Measuring/viewing selector to Measuring position for reset analyzer. (Zero calibration) as Fig. 5

2.4 Turn on the colour analyzer (CA-110).

2.5 Press 0-CAL button to start reset analyzer. See Fig. 6



Fig.4

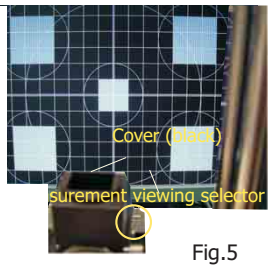


Fig.5



O-CAL  
Fig.6

2.6 Switch light probe to Viewing position.

2.7 Move the Lens barrel forward or backward to get clear image as shown in Fig. 7

2.8 Switch light probe to Measuring position. It should be able to indicate colour value on the CA-110.

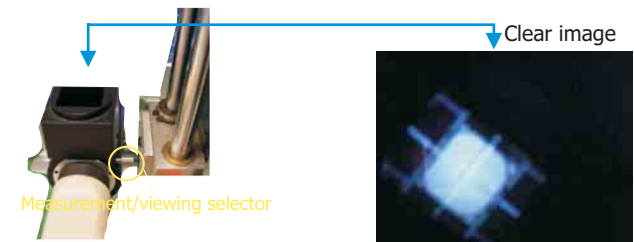


Fig.7

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2.9 Set smart picture as "NORMAL"

Set SCALER GAIN R G B = VIDEO SCALER GAIN R G B(alignment done).

The 1931 CIE chromaticity (X, Y) co-ordinates shall be:

|            |                  |
|------------|------------------|
|            | Normal/ (8500°K) |
| x (center) | 0.289 ± 0.030    |
| y (center) | 0.304 ± 0.030    |

Readings with Minolta CA-110.

2.10 Set Smart picture as "WARM", and "COOL" The SCALER GAIN R G B =

|        |  |       |       |
|--------|--|-------|-------|
|        | Normal/ the R' \G' \B' are gain after alignment. | WARM  | COOL  |
| R gain | R'   | R'    | R'-10 |
| G gain | G'   | G'-10 | G'-10 |
| B gain | B'   | B'-10 | B'    |

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LPL panel:  
\*\*\*\*\*  
EDID log file  
\*\*\*\*\*

Vendor/Product Identification  
ID Manufacturer Name : PHL  
ID Product Code : 4650 (HEX.)  
ID Serial Number : 1010101 (HEX.)  
Week of Manufacture : 0  
Year of Manufacture : 2004

EDID Version, Revision  
Version : 1  
Revision : 3

Basic Display Parameters/Features  
Video Input Definition : Analog Video Input  
0.700V/0.300V (1.00Vpp)  
without Blank-to-Black Setup  
Separate Sync  
without Composite Sync  
without Sync on Green  
no Serration required  
  
Maximum H Image Size : 30  
Maximum V Image Size : 23  
  
Display Transfer Characteristic : 2.2  
(gamma)  
  
Feature Support (DPMS) : Standby  
Suspend  
Active Off  
  
Display Type : RGB color display  
Standard Default Color Space : Primary color space  
Preferred Timing Mode : Detailed timing block 1

Color Characteristics  
Red X coordinate : 0.619  
Red Y coordinate : 0.343  
Green X coordinate : 0.298  
Green Y coordinate : 0.578  
Blue X coordinate : 0.149  
Blue Y coordinate : 0.082  
White X coordinate : 0.289  
White Y coordinate : 0.304

Established Timings  
Established Timings I : 640 x 480 @60Hz (IBM,VGA)  
800 x 600 @56Hz (VESA)  
800 x 600 @60Hz (VESA)  
  
Established Timings II : 1024 x 768 @60Hz (VESA)  
  
Manufacturer's timings :

Standard Timing Identification : Unused

Monitor Descriptor #1  
Serial Number :

Monitor Descriptor #2  
Serial Number :

Monitor Descriptor #3  
Monitor Name : Philips F1 15

Monitor Descriptor #4  
Monitor Range Limits  
Min. Vt rate Hz : 58  
Max. Vt rate Hz : 62  
Min. Horiz. rate kHz : 30  
Max. Horiz. rate kHz : 49  
Max. Supported Pixel : 70  
  
No secondary GTF timing formula supported.  
  
Extension Flag : 0  
  
Check sum : F8 (HEX.)

\*\*\*\*\*  
EDID data (128 bytes)  
\*\*\*\*\*  
  
0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00  
8: 41 9: 0c 10: 50 11: 46 12: 01 13: 01 14: 01 15: 01  
16: 00 17: 0e 18: 01 19: 03 20: 08 21: 1e 22: 17 23: 78  
24: ee 25: b4 26: 43 27: 9e 28: 57 29: 4c 30: 94 31: 26  
32: 15 33: 4a 34: 4d 35: 23 36: 08 37: 00 38: 01 39: 01  
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01  
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 00 55: 00  
56: 00 57: ff 58: 00 59: 0a 60: 20 61: 20 62: 20 63: 20  
64: 20 65: 20 66: 20 67: 20 68: 20 69: 20 70: 20 71: 20  
72: 00 73: 00 74: 00 75: ff 76: 00 77: 0a 78: 20 79: 20  
80: 20 81: 20 82: 20 83: 20 84: 20 85: 20 86: 20 87: 20  
88: 20 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50  
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 46  
104: 31 105: 20 106: 31 107: 35 108: 00 109: 00 110: 00 111: fd  
112: 00 113: 3a 114: 3e 115: 1e 116: 31 117: 07 118: 00 119: 0a  
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: f8

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AUO panel:

\*\*\*\*\*  
EDID log file  
\*\*\*\*\*

Vendor/Product Identification  
ID Manufacturer Name : PHL  
ID Product Code : 4650 (HEX.)  
ID Serial Number : 1010101 (HEX.)  
Week of Manufacture : 0  
Year of Manufacture : 2004

EDID Version, Revision  
Version : 1  
Revision : 3

Basic Display Parameters/Features  
Video Input Definition : Analog Video Input  
0.700V/0.300V (1.00Vpp)  
without Blankto-Black Setup  
Separate Sync  
without Composite Sync  
without Sync on Green  
no Serration required  
  
Maximum H Image Size : 30  
Maximum V Image Size : 23  
  
Display Transfer Characteristic : 2.4  
(gamma)  
  
Feature Support (DPMS) : Standby  
Suspend  
Active Off  
  
Display Type : RGB color display  
Standard Default Color Space : Primary color space  
Preferred Timing Mode : Detailed timing block 1

Color Characteristics  
Red X coordinate : 0.604  
Red Y coordinate : 0.347  
Green X coordinate : 0.283  
Green Y coordinate : 0.583  
Blue X coordinate : 0.147  
Blue Y coordinate : 0.088  
White X coordinate : 0.279  
White Y coordinate : 0.291

Established Timings  
Established Timings I : 640 x 480 @60Hz (IBM,VGA)  
800 x 600 @56Hz (VESA)  
800 x 600 @60Hz (VESA)  
  
Established Timings II : 1024 x 768 @60Hz (VESA)  
  
Manufacturer's timings :

Standard Timing Identification : Unused

Monitor Descriptor #1  
Serial Number :

Monitor Descriptor #2  
Serial Number :

Monitor Descriptor #3  
Monitor Name : Philips F1 15

Monitor Descriptor #4  
Monitor Range Limits  
Min. Vt rate Hz : 58  
Max. Vt rate Hz : 62  
Min. Horiz. rate kHz : 30  
Max. Horiz.rate kHz : 49  
Max. Supported Pixel : 70  
  
No secondary GTF timing formula supported.

Extension Flag : 0  
  
Check sum : 44 (HEX.)

\*\*\*\*\*  
EDID data (128 bytes)  
\*\*\*\*\*  
  
0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00  
8: 41 9: 0c 10: 50 11: 46 12: 01 13: 01 14: 01 15: 01  
16: 00 17: 0e 18: 01 19: 03 20: 08 21: 1e 22: 17 23: 8c  
24: ee 25: b9 26: ea 27: 9a 28: 58 29: 48 30: 95 31: 25  
32: 16 33: 47 34: 4a 35: 23 36: 08 37: 00 38: 01 39: 01  
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01  
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 00 55: 00  
56: 00 57: ff 58: 00 59: 0a 60: 20 61: 20 62: 20 63: 20  
64: 20 65: 20 66: 20 67: 20 68: 20 69: 20 70: 20 71: 20  
72: 00 73: 00 74: 00 75: ff 76: 00 77: 0a 78: 20 79: 20  
80: 20 81: 20 82: 20 83: 20 84: 20 85: 20 86: 20 87: 20  
88: 20 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50  
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 46  
104: 31 105: 20 106: 31 107: 35 108: 00 109: 00 110: 00 111: fd  
112: 00 113: 3a 114: 3e 115: 1e 116: 31 117: 07 118: 00 119: 0a  
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 44

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## 9.3 CPT panel:

\*\*\*\*\*  
EDID log file  
\*\*\*\*\*

## Vendor/Product Identification

ID Manufacturer Name : PHL  
ID Product Code : 4650 (HEX.)  
ID Serial Number : 1010101 (HEX.)  
Week of Manufacture : 0  
Year of Manufacture : 2004

## EDID Version, Revision

Version : 1  
Revision : 3

## Basic Display Parameters/Features

Video Input Definition : Analog Video Input  
0.700V/0.300V (1.00Vpp)  
without Blank-to-Black Setup  
Separate Sync  
without Composite Sync  
without Sync on Green  
no Serration required

Maximum H Image Size : 30  
Maximum V Image Size : 23

Display Transfer Characteristic : 2.3  
(gamma)

Feature Support (DPMS) : Standby  
Suspend  
Active Off

Display Type : RGB color display  
Standard Default Color Space : Primary color space  
Preferred Timing Mode : Detailed timing block 1

## Color Characteristics

Red X coordinate : 0.643  
Red Y coordinate : 0.335  
Green X coordinate : 0.297  
Green Y coordinate : 0.588  
Blue X coordinate : 0.142  
Blue Y coordinate : 0.078  
White X coordinate : 0.313  
White Y coordinate : 0.329

## Established Timings

Established Timings I : 640 x 480 @60Hz (IBM,VGA)  
800 x 600 @56Hz (VESA)  
800 x 600 @60Hz (VESA)

Established Timings II : 1024 x 768 @60Hz (VESA)

Manufacturer's timings :

Standard Timing Identification : Unused

## Monitor Descriptor #1

Serial Number :

## Monitor Descriptor #2

Serial Number :

## Monitor Descriptor #3

Monitor Name : Philips F1 15

## Monitor Descriptor #4

Monitor Range Limits  
Min. Vt rate Hz : 58  
Max. Vt rate Hz : 62  
Min. Horiz. rate kHz : 30  
Max. Horiz. rate kHz : 49  
Max. Supported Pixel : 70

No secondary GTF timing formula supported.

Extension Flag : 0

Check sum : DE (HEX.)

\*\*\*\*\*

## EDID data (128 bytes)

\*\*\*\*\*

|         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 0: 00   | 1: ff   | 2: ff   | 3: ff   | 4: ff   | 5: ff   | 6: ff   | 7: 00   |
| 8: 41   | 9: 0c   | 10: 50  | 11: 46  | 12: 01  | 13: 01  | 14: 01  | 15: 01  |
| 16: 00  | 17: 0e  | 18: 01  | 19: 03  | 20: 08  | 21: 1e  | 22: 17  | 23: 82  |
| 24: ee  | 25: b2  | 26: 45  | 27: a4  | 28: 55  | 29: 4c  | 30: 96  | 31: 24  |
| 32: 14  | 33: 50  | 34: 54  | 35: 23  | 36: 08  | 37: 00  | 38: 01  | 39: 01  |
| 40: 01  | 41: 01  | 42: 01  | 43: 01  | 44: 01  | 45: 01  | 46: 01  | 47: 01  |
| 48: 01  | 49: 01  | 50: 01  | 51: 01  | 52: 01  | 53: 01  | 54: 00  | 55: 00  |
| 56: 00  | 57: ff  | 58: 00  | 59: 0a  | 60: 20  | 61: 20  | 62: 20  | 63: 20  |
| 64: 20  | 65: 20  | 66: 20  | 67: 20  | 68: 20  | 69: 20  | 70: 20  | 71: 20  |
| 72: 00  | 73: 00  | 74: 00  | 75: ff  | 76: 00  | 77: 0a  | 78: 20  | 79: 20  |
| 80: 20  | 81: 20  | 82: 20  | 83: 20  | 84: 20  | 85: 20  | 86: 20  | 87: 20  |
| 88: 20  | 89: 20  | 90: 00  | 91: 00  | 92: 00  | 93: fc  | 94: 00  | 95: 50  |
| 96: 68  | 97: 69  | 98: 6c  | 99: 69  | 100: 70 | 101: 73 | 102: 20 | 103: 46 |
| 104: 31 | 105: 20 | 106: 31 | 107: 35 | 108: 00 | 109: 00 | 110: 00 | 111: fd |
| 112: 00 | 113: 3a | 114: 3e | 115: 1e | 116: 31 | 117: 07 | 118: 00 | 119: 0a |
| 120: 20 | 121: 20 | 122: 20 | 123: 20 | 124: 20 | 125: 20 | 126: 00 | 127: de |

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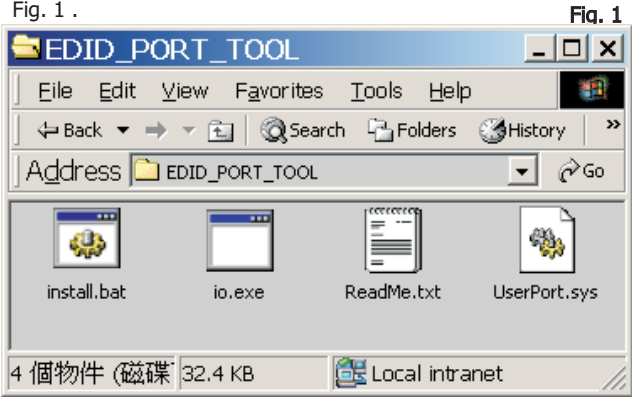
General

DDC Data Re-programming  
In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed"Analog DDC IC, & EEPROM".  
It is advised to re-soldered DDC IC and main EEPROM from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information  
Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

System and equipment requirements

- 1. An i486 (or above) personal computer or compatible.
- 2. Microsoft operation system Windows 95/98 .  
You have to Install the EDID\_PORT\_Tool under Win2000/XP . As Fig. 1 .



A. Cody the "UserPort.sys" to C:\WINNT\system32\drivers(win2000)

C:\WINDOWS\system32\drivers(winXP)

B. Running " io.exe" everytime, Before you start to programming edid data .

- 3. EDID45.EXE program .
- 4. A/D Alignment kits (3138 106 10396):  
inclusion :    a. Alignment box   x1 (as Fig. 2)

Fig. 2



- b. Printer cable   x1
- c. (D-Sub) to (D-Sub) cable   x1

Note: The alignment box has already build-in a batteries socket for using batteries (8~12V) as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.

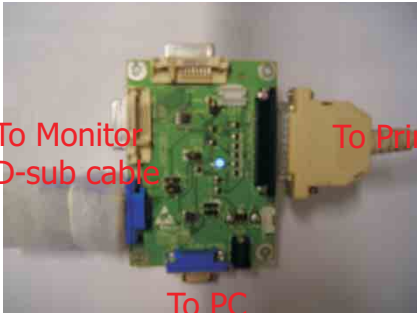


Fig. 3

Pin assignment

| PIN No. | SIGNAL               |
|---------|----------------------|
| 1       | Red                  |
| 2       | Green                |
| 3       | Blue                 |
| 4       | GND                  |
| 5       | GND                  |
| 6       | Red GND              |
| 7       | Green GND            |
| 8       | Blue GND             |
| 9       | +5V (Supply from PC) |
| 10      | Sync GND             |
| 11      | GND                  |
| 12      | Bi-directional data  |
| 13      | H-sync               |
| 14      | V-sync               |
| 15      | Data clock           |



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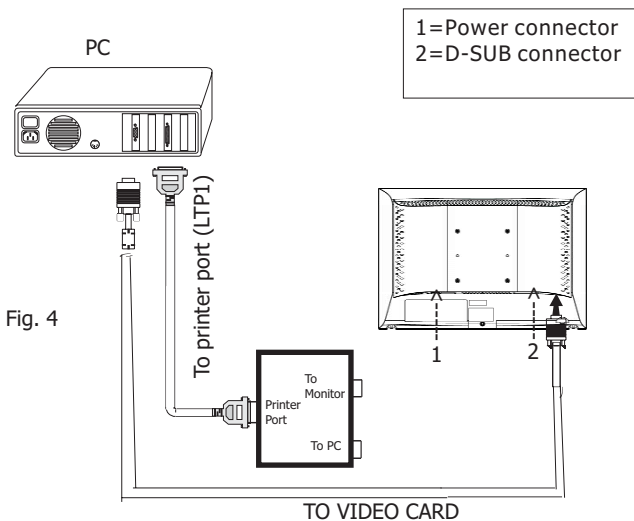
Configuration and procedure

There are 2 chips contained OSD string, serial number..etc on the circuit board, main EEPROM which storage all factory settings,OSD string. DDC IC which storage 128byte EDID data(serial number ..etc.). Following descriptions are the connection and procedure for Analog and main EEPROM can be re-programmed along with Analog/Digital IC by enable factory memory data write function on the DDC program (EDID45.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID45.EXE). Following steps show you the procedures and connection.

Step 1: Connecting printer cable and D-Sub cable of monitor as Fig. 4



Step 2: Installation of EDID45.EXE

Method 1: Start on DDC program

Start Microsoft Windows.

- 1. The Program"EDID45.EXE" in service manual cd-rom be copied to C:\ .
- 2. Click Start , choose Run at start menu of Windows as shown In Fig. 5.

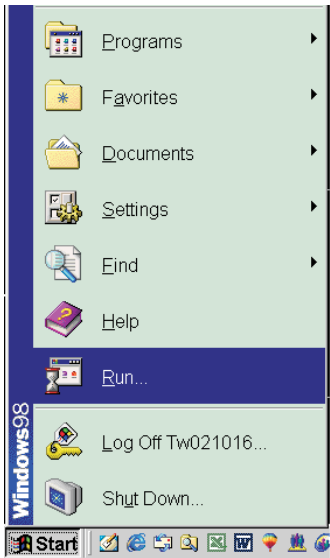


Fig. 5

- 3. At the submenu, type the letter of your computer's hard disk drive followed by :EDID45 (for example, C:\EDID45, as shown in Fig. 6).

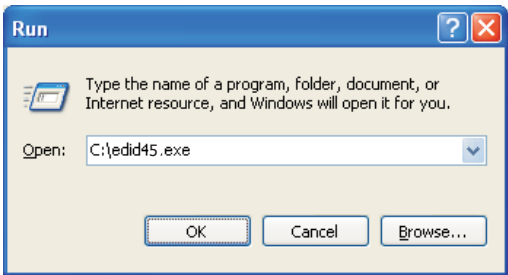


Fig. 6

- 4. Click OK button. The main menu appears (as shown in Fig. 7). This is for initialize alignment box.



Fig. 7

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 8) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and

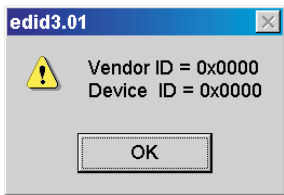


Fig. 8

Note 2: During the loading, EDID45 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.

- 1. The data structure of EDID was incorrect.
- 2. DDC IC that you are trying to load data is empty.
- 3. Wrong communication channel has set at configuration setup

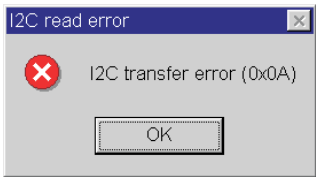


Fig. 9

Go to cover page

Re-programming DDC IC

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 10

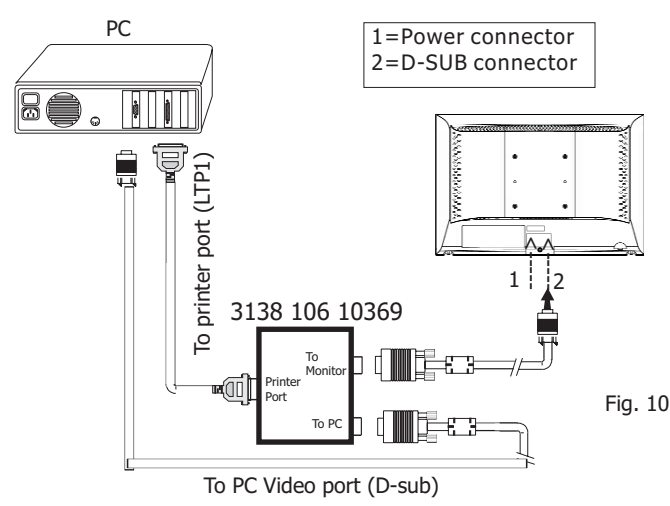


Fig. 10

Step 2: Read DDC data from monitor

- 1. Click icon as shown in Fig. 11 from the tool bar to bring up the Channels "Configuration Setup" windows as shown in Fig. 12.

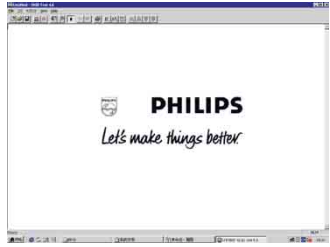


Fig. 11

- 2. Select the DDC2Bi as the communication channel. As shown in Fig. 12.

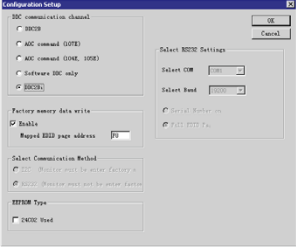
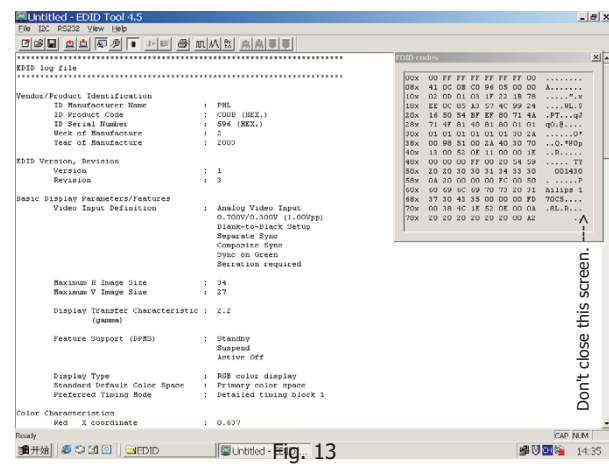


Fig. 12

- 3. Click OK button to confirm your selection.
- 4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.



Step 3: Modify DDC data (verify EDID version, week, year)

- 1. Click icon (new function) from the tool bar, bring up Step 1 of 9 as shown in Fig. 14. EDID45 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

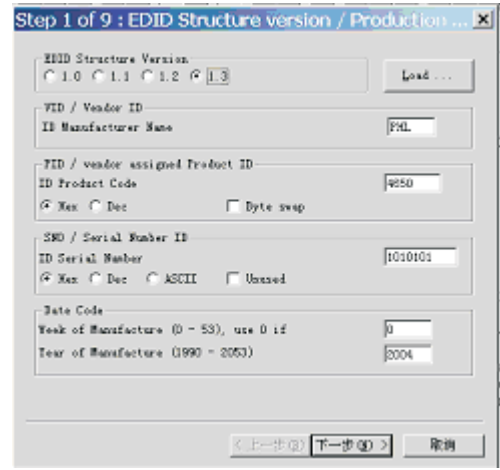


Fig. 14

Step 4: Modify DDC data (Monitor Serial No.)

- 1. Click Next , bring up Fig. 15.

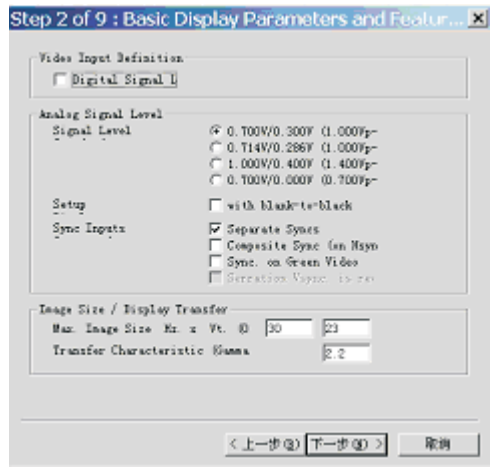


Fig. 15

- 2. Click Next , bring up Fig. 16.

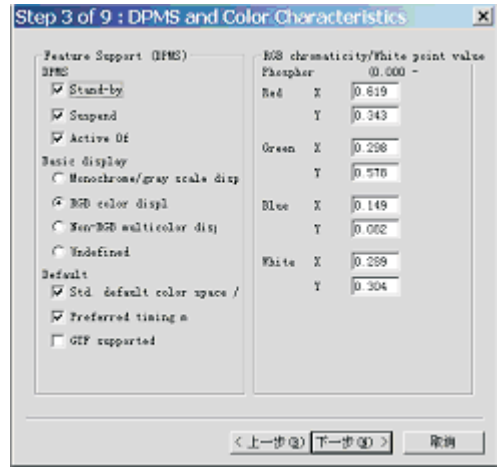


Fig. 16

Go to cover page

3. Click Next , bring up Fig. 17.

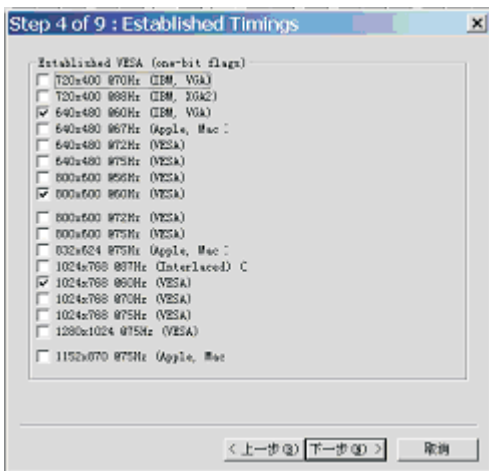


Fig. 17

6. Click Next , bring up Fig. 20.  
- Serial number can be filled up or be changed at this moment.

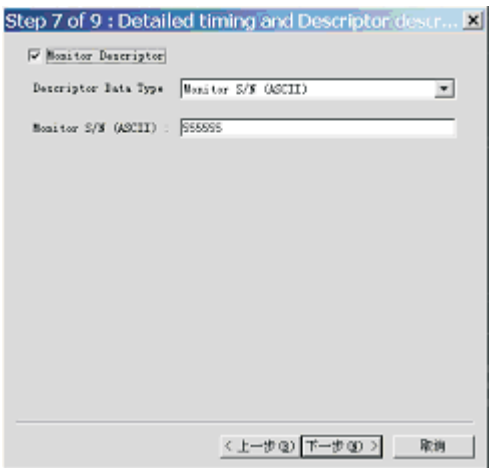


Fig. 20

4. Click Next , bring up Fig. 18.



Fig. 18

7. Click Next , bring up Fig. 21.

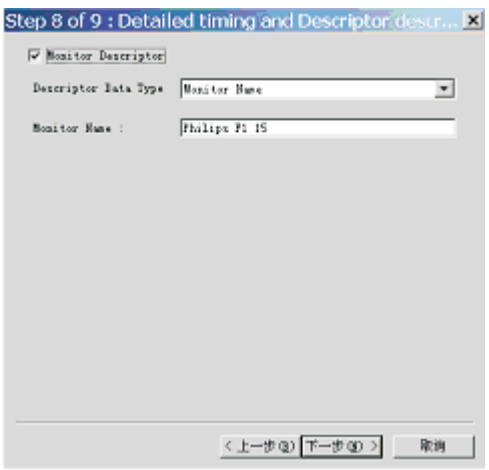


Fig. 21

5. Click Next , bring up Fig. 19.

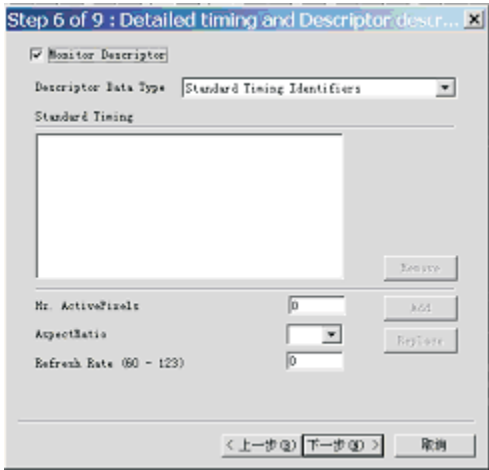


Fig. 19

8. Click Next , bring up Fig. 20.

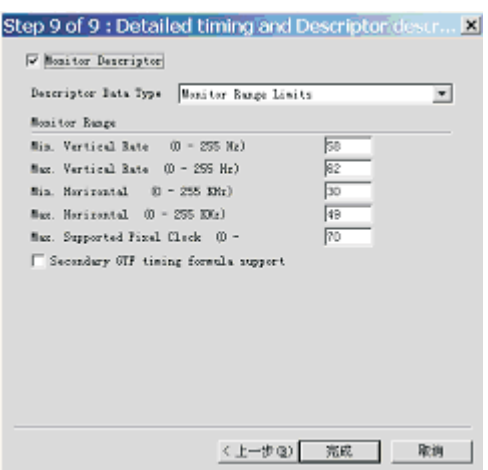


Fig. 22

◀◀ Go to cover page

Step 5: Write DDC data  
1. Configuration should be as Fig. 23. And press OK.

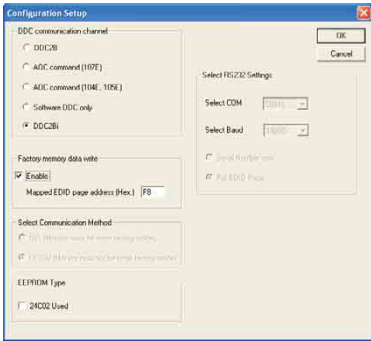


Fig. 23

Access factory. Mode

- Step 1 : Select the source "PC" and then turn off LCD-TV.
- Step 2 : [Push "power " button and then push the "VOL- " and "VOL+" buttons at the same time immediately and hold it] about five seconds then release all buttons.
- Press "menu"button and bring up factory mode indication

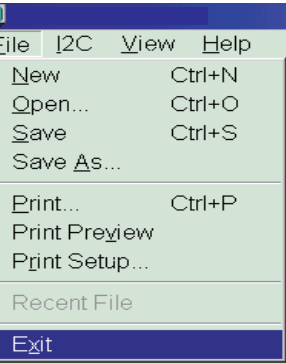




Fig. 25

3. Click  (Write EDID) icon from the tool bar to write DDC data. Bring up "Writing 0%~100%, ready" a progressing bar on the left down corner.
4. Turn off/on monitor

Step 6: Save DDC data  
Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click  (Save) icon (or click "file"-> "save as") from the tool bar And give a file name as shown in Fig. 24. The file type is EDID45 file (\*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc flie to re-load it into DDC IC for DDC Data application.

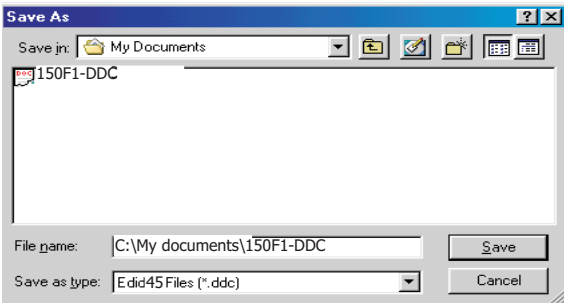


Fig. 24

2. Click Save.

Go to cover page

Configuration and procedure

"Easywriter " The software is provided by Novatek to upgrade the firmware of CPU.  
It is a windows-based program, which cannot be run in MS-DOS.  
DDC2BI\_ISP TOOL (3138 106 10396) is for the interface between "Parallel Port of PC" and "15 pin-D-SUB connector of Monitor".

System and equipment requirements

- 1. An i486 (or above) personal computer or compatible.
- 2. Microsoft operation system Windows 95/98/2000/XP.
- 3. ISP Software " Easywrite "
- 4. DDC2BI\_ISP TOOL (3138 106 10396) as shown in Fig. 1

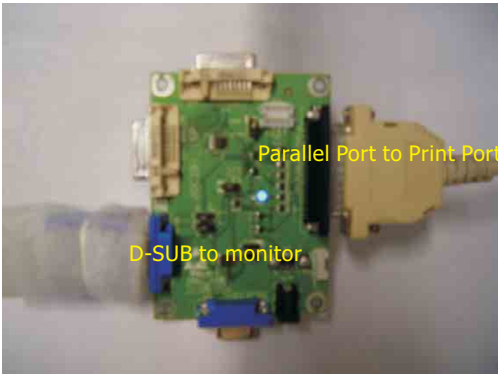


Fig. 1

- 5. Connect DDC2BI\_ISP TOOL and Mains cord to Monitor as shown in Fig. 2.

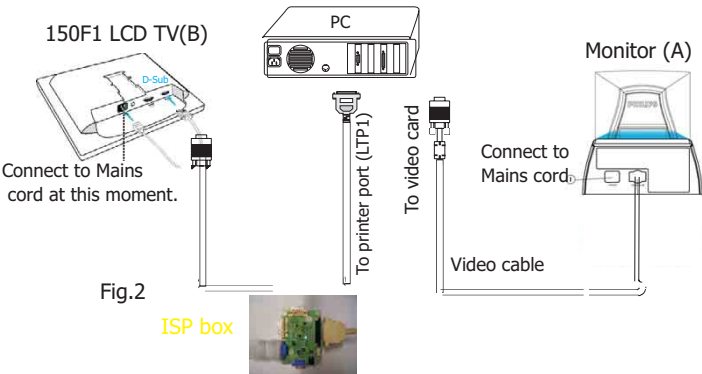


Fig.2

- 6. Run the Easywriter program

- Step 1 : Make a folder in your PC as shown in Fig. 3.  
For example : C:\easywrite
- Step 2 : Copy ISP Software Easywriter.zip into your folder as shown in Fig.3.
- Step 3 : Unzip Easywriter.zip into your folder as shown in Fig. 3.
- Step 4 : Double click the EasywriterV2.07.exe icon to run the Application as Fig. 4.

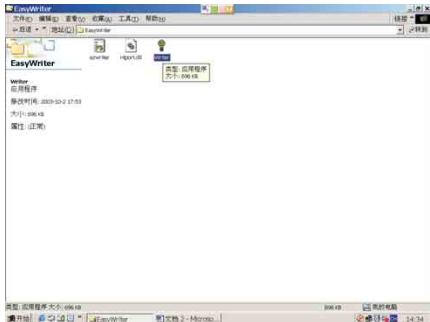
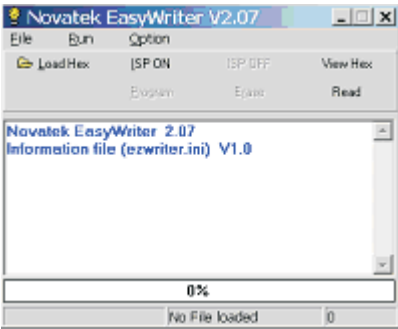


Fig. 4



- Step 5 :Copy the .hex code to C:\easywrite as shown in Fig. 5 .

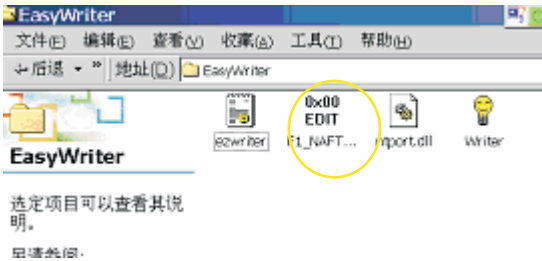


Fig. 5

Update the firmware

- 1. Press the load hex then select the .hex code as shown in Fig.6

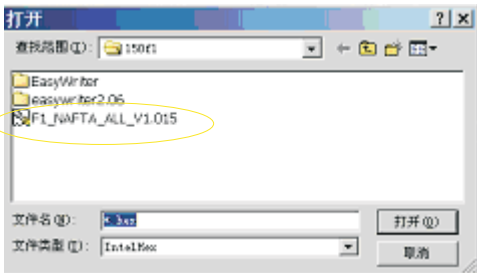


Fig. 6

- 2. Press the AUTO to run the program,the firmware be updated as shown in Fig7` Fig.8

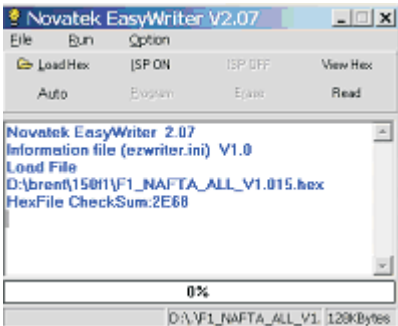


Fig. 7

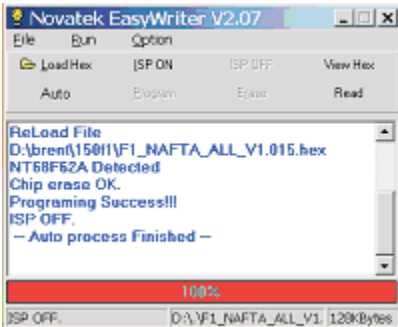


Fig.8

◀◀ Go to cover page

Press the file— exit to end program, as shown in Fig.9

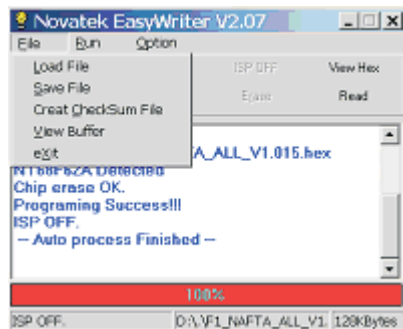
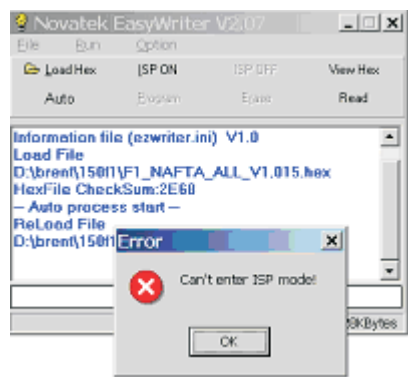


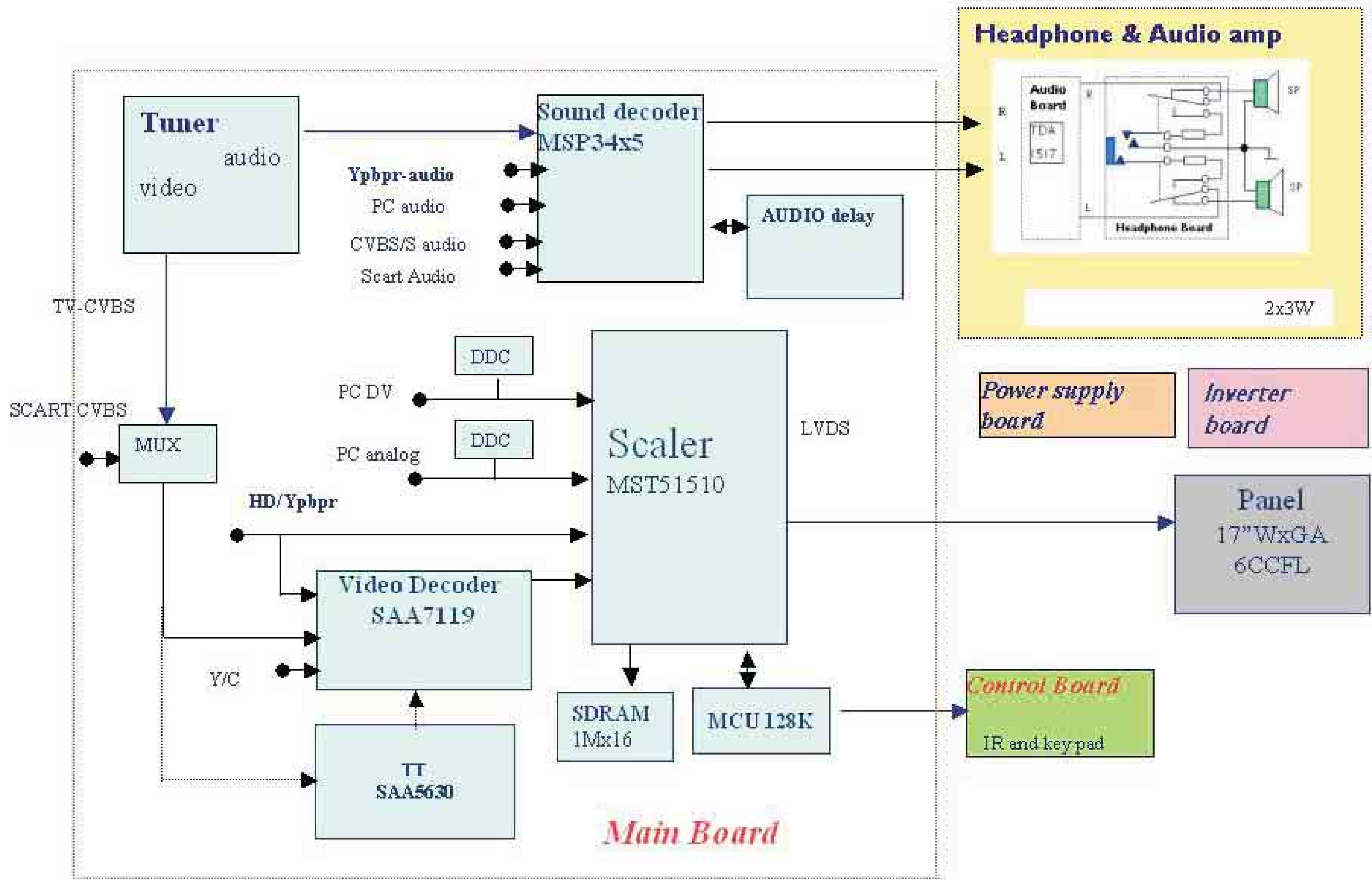
Fig.9

If there is a warning message coming as shown in Fig 10. , you have to check the AC power, Video cable, or Novatek MCU.

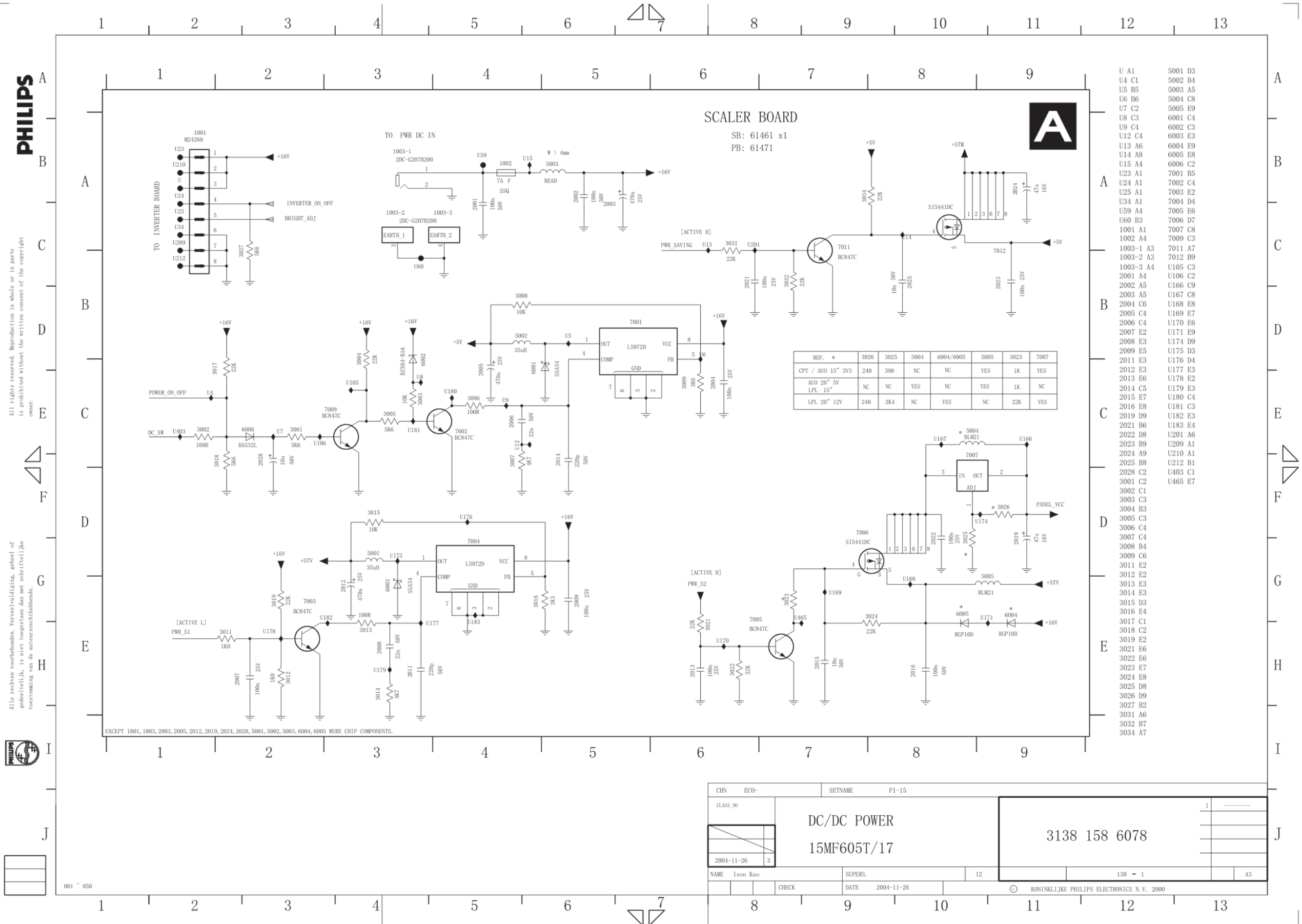




## BLOCK DIAGRAM

[Go to cover page](#)

## DC/DC POWER



PC-IN Diagram

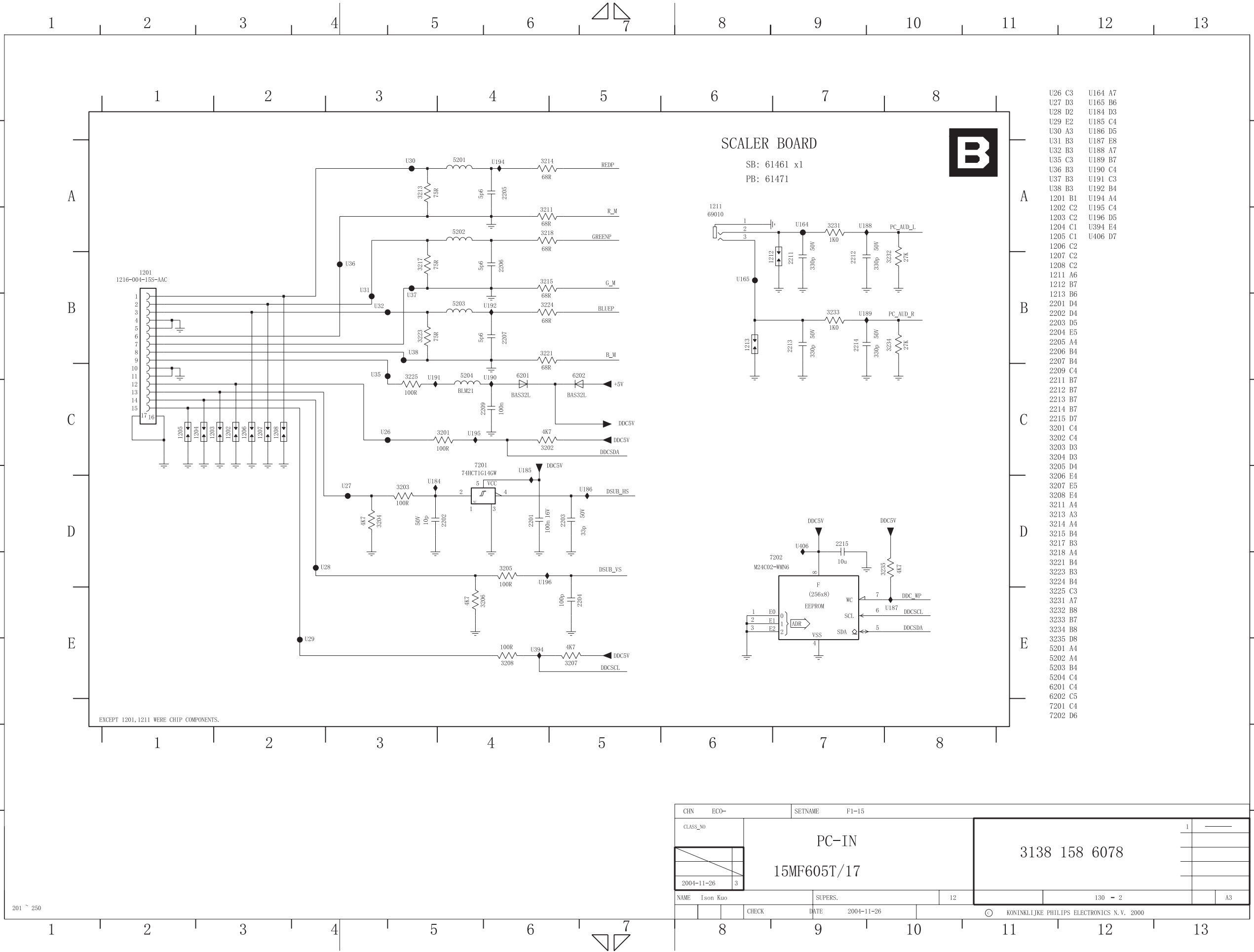
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201 ~ 250



|   |             |               |         |
|---|-------------|---------------|---------|
| CHN                                       | ECO-        | SETNAME       | F1-15   |
| CLASS_NO                                  | PC-IN       |               | 1       |
|   | 15MF605T/17 |               |         |
| 2004-11-26                                | 3           | 3138 158 6078 |         |
| NAME                                      | Ison Kuo    | SUPERS.       | 12      |
| CHECK                                     | DATE        | 2004-11-26    | 130 ~ 2 |
| KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000 |             |               |         |

## SCART DIAGRAM

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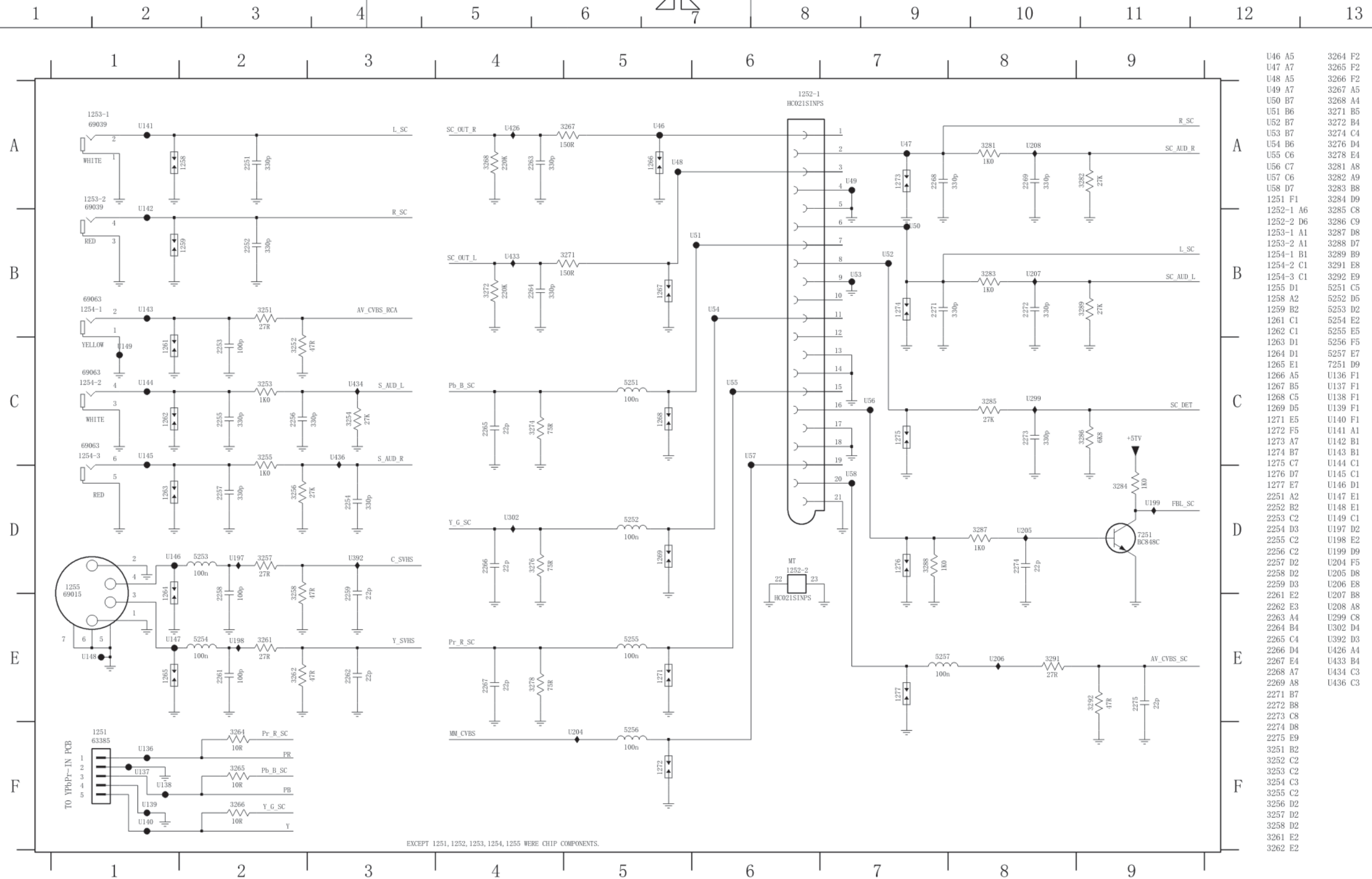
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SCALER BOARD

SB: 61461 x1  
PB: 61471



|           |         |
|-----------|---------|
| U46 A5    | 3264 F2 |
| U47 A7    | 3265 F2 |
| U48 A5    | 3266 F2 |
| U49 A7    | 3267 A5 |
| U50 B7    | 3268 A4 |
| U51 B6    | 3271 B5 |
| U52 B7    | 3272 B4 |
| U53 B7    | 3274 C4 |
| U54 B6    | 3276 D4 |
| U55 C6    | 3278 E4 |
| U56 C7    | 3281 A8 |
| U57 C6    | 3282 A9 |
| U58 D7    | 3283 B8 |
| 1251 F1   | 3284 D9 |
| 1252-1 A6 | 3285 C8 |
| 1252-2 D6 | 3286 C9 |
| 1253-1 A1 | 3287 D8 |
| 1253-2 A1 | 3288 D7 |
| 1254-1 B1 | 3289 B9 |
| 1254-2 C1 | 3291 E8 |
| 1254-3 C1 | 3292 E9 |
| 1255 D1   | 5251 C5 |
| 1258 A2   | 5252 D5 |
| 1259 B2   | 5253 D2 |
| 1261 C1   | 5254 E2 |
| 1262 C1   | 5255 F5 |
| 1263 D1   | 5256 F5 |
| 1264 D1   | 5257 E7 |
| 1265 E1   | 7251 D9 |
| 1266 A5   | U136 F1 |
| 1267 B5   | U137 F1 |
| 1268 C5   | U138 F1 |
| 1269 D5   | U139 F1 |
| 1271 E5   | U140 F1 |
| 1272 F5   | U141 A1 |
| 1273 A7   | U142 B1 |
| 1274 B7   | U143 B1 |
| 1275 C7   | U144 C1 |
| 1276 D7   | U145 C1 |
| 1277 E7   | U146 D1 |
| 2251 A2   | U147 E1 |
| 2252 B2   | U148 E1 |
| 2253 C2   | U149 C1 |
| 2254 D3   | U197 D2 |
| 2255 C2   | U198 E2 |
| 2256 C2   | U199 D9 |
| 2257 D2   | U204 F5 |
| 2258 D2   | U205 D8 |
| 2259 D3   | U206 F8 |
| 2261 E2   | U207 B8 |
| 2262 E3   | U208 A8 |
| 2263 A4   | U299 C8 |
| 2264 B4   | U302 D4 |
| 2265 C4   | U392 D3 |
| 2266 D4   | U426 A4 |
| 2267 E4   | U433 B4 |
| 2268 A7   | U434 C3 |
| 2269 A8   | U436 C3 |
| 2271 B7   |         |
| 2272 B8   |         |
| 2273 C8   |         |
| 2274 D8   |         |
| 2275 E9   |         |
| 3251 B2   |         |
| 3252 C2   |         |
| 3253 C2   |         |
| 3254 C3   |         |
| 3255 C2   |         |
| 3256 D2   |         |
| 3257 D2   |         |
| 3258 D2   |         |
| 3261 E2   |         |
| 3262 E2   |         |

|            |  |                          |  |            |  |   |  |
|------------|--|--------------------------|--|------------|--|---|--|
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|            |  |                          |  |            |  |   |  |
|            |  |                          |  |            |  |   |  |
|            |  |                          |  |            |  |   |  |
| 2004-11-26 |  | 3                        |  |            |  |   |  |
| NAME       |  | Ison Kuo                 |  | SUPERS.    |  | 12  |  |
|            |  |                          |  |            |  | 130 - 3                                   |  |
| CHECK      |  | DATE                     |  | 2004-11-26 |  | A3  |  |
|            |  |                          |  |            |  | KONINKLIJKE PHILIPS ELECTRONICS N.V. 2004 |  |

Two right triangles are shown side-by-side, sharing a common horizontal base. The total length of the base is labeled as 7.



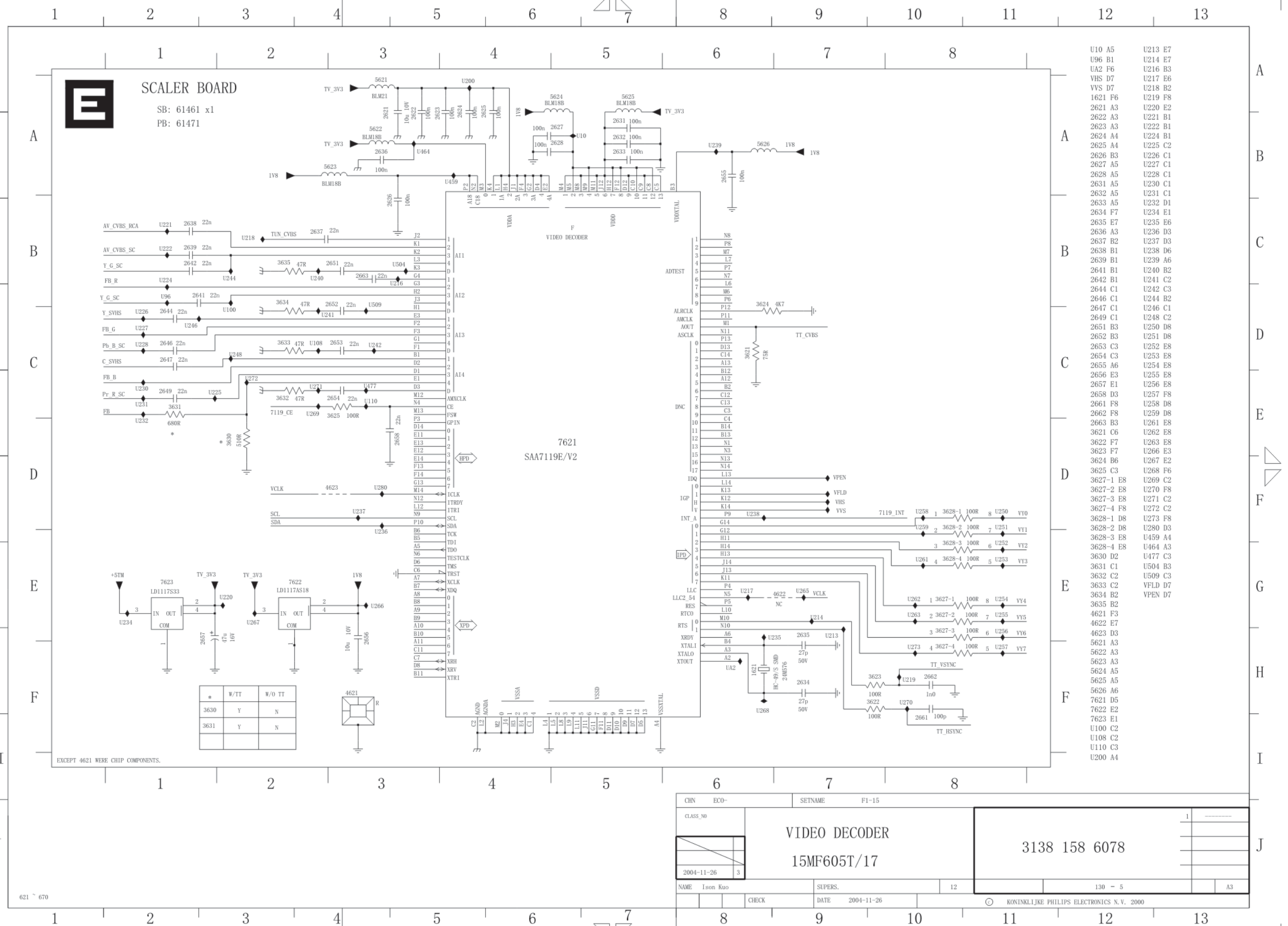
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| NAME       |  | Ison Kuo  |  | SUPERS. |  | 12  |  |   |  |
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## VIDEO DECODER DIAGRAM

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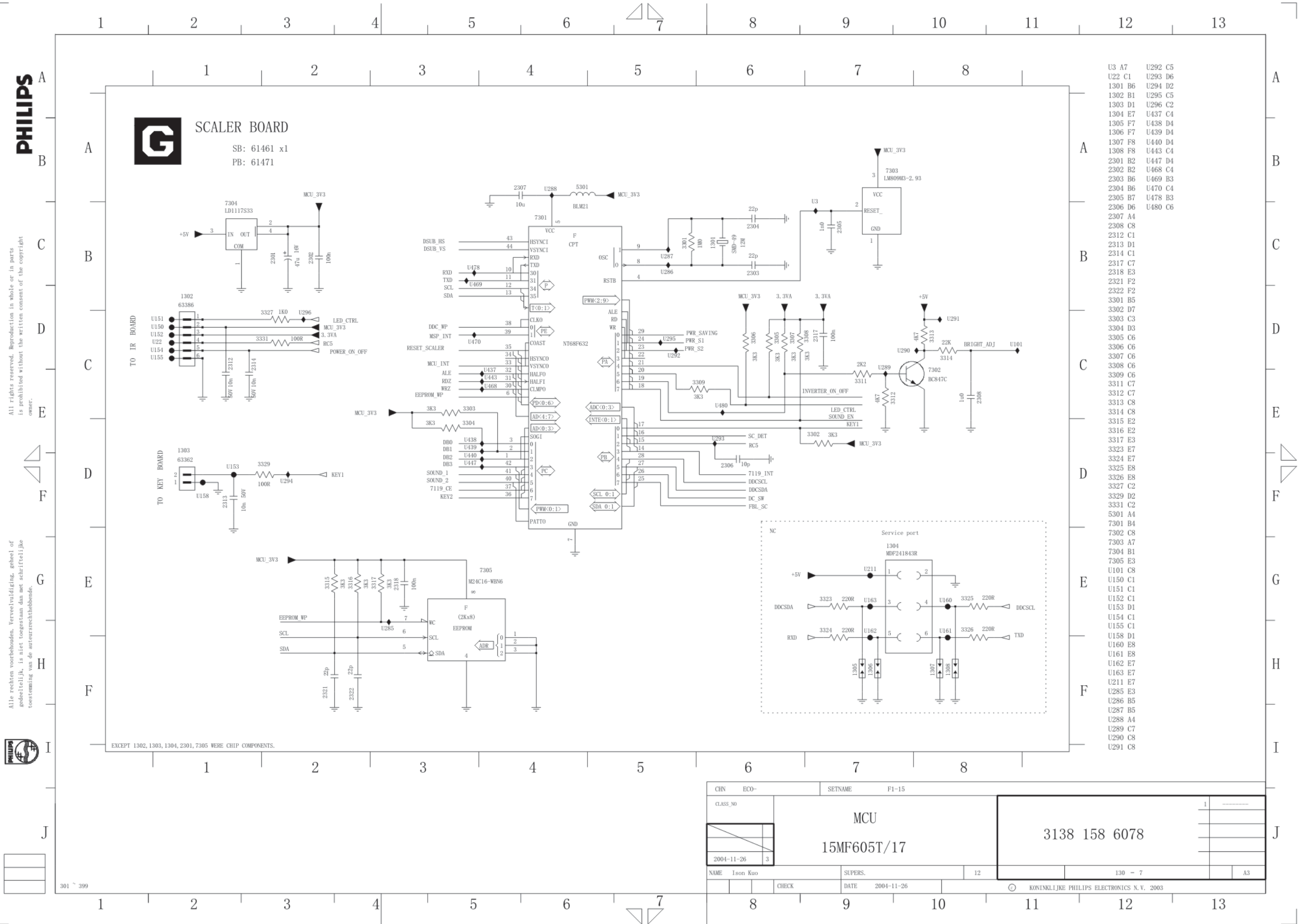


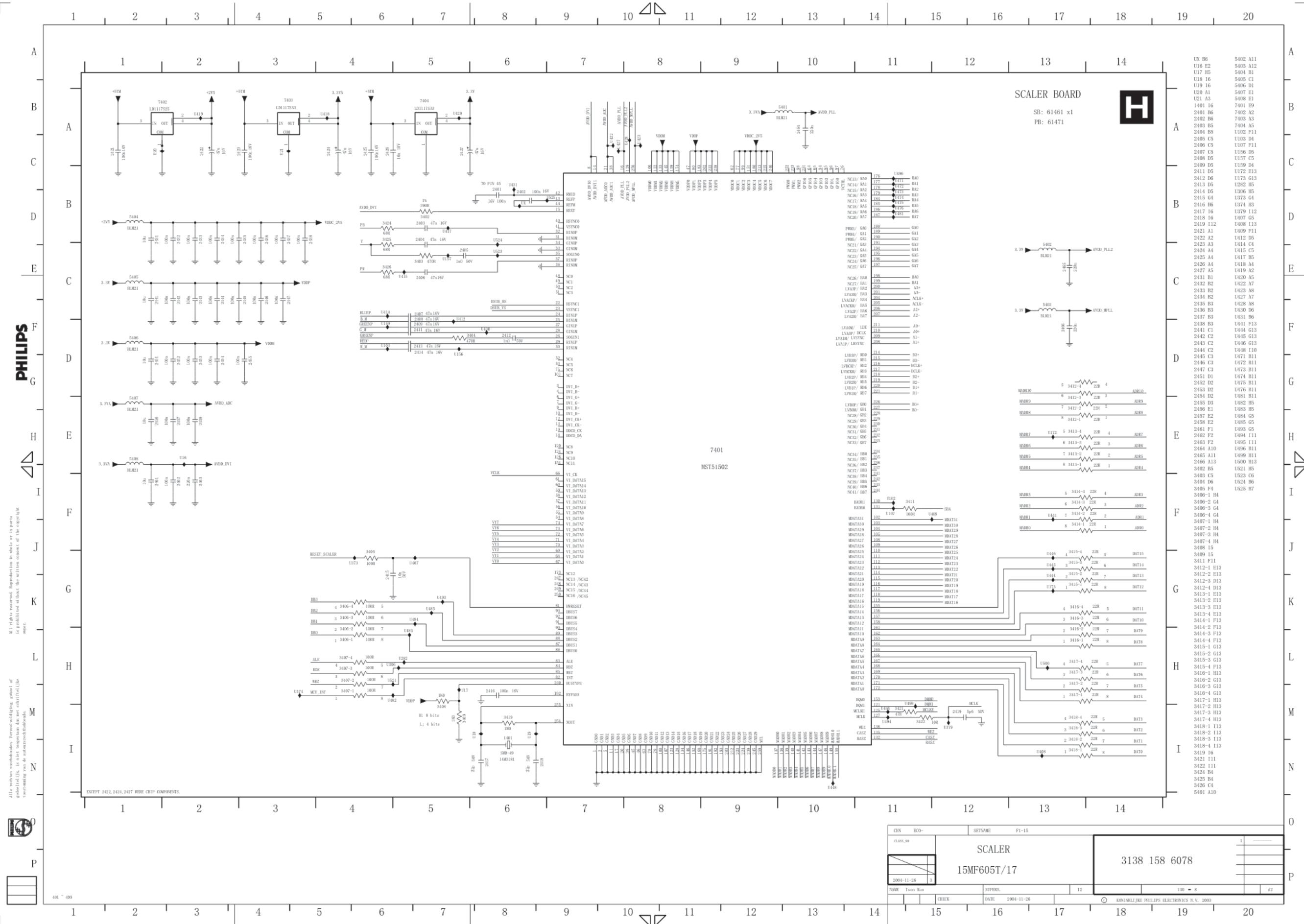


## T/T DECODER Diagram



## MCU DIAGRAM



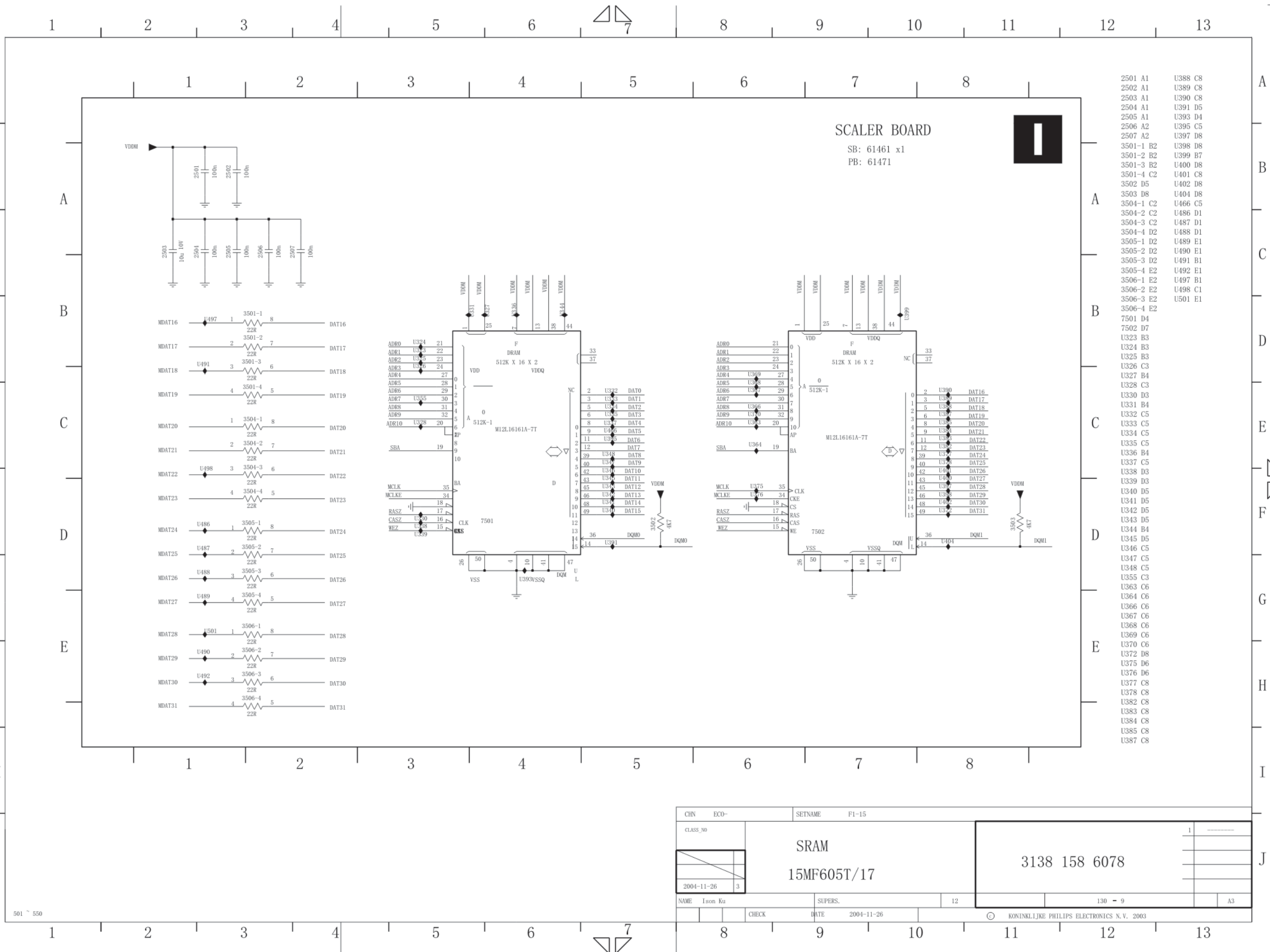


SRAM DIAGRAM

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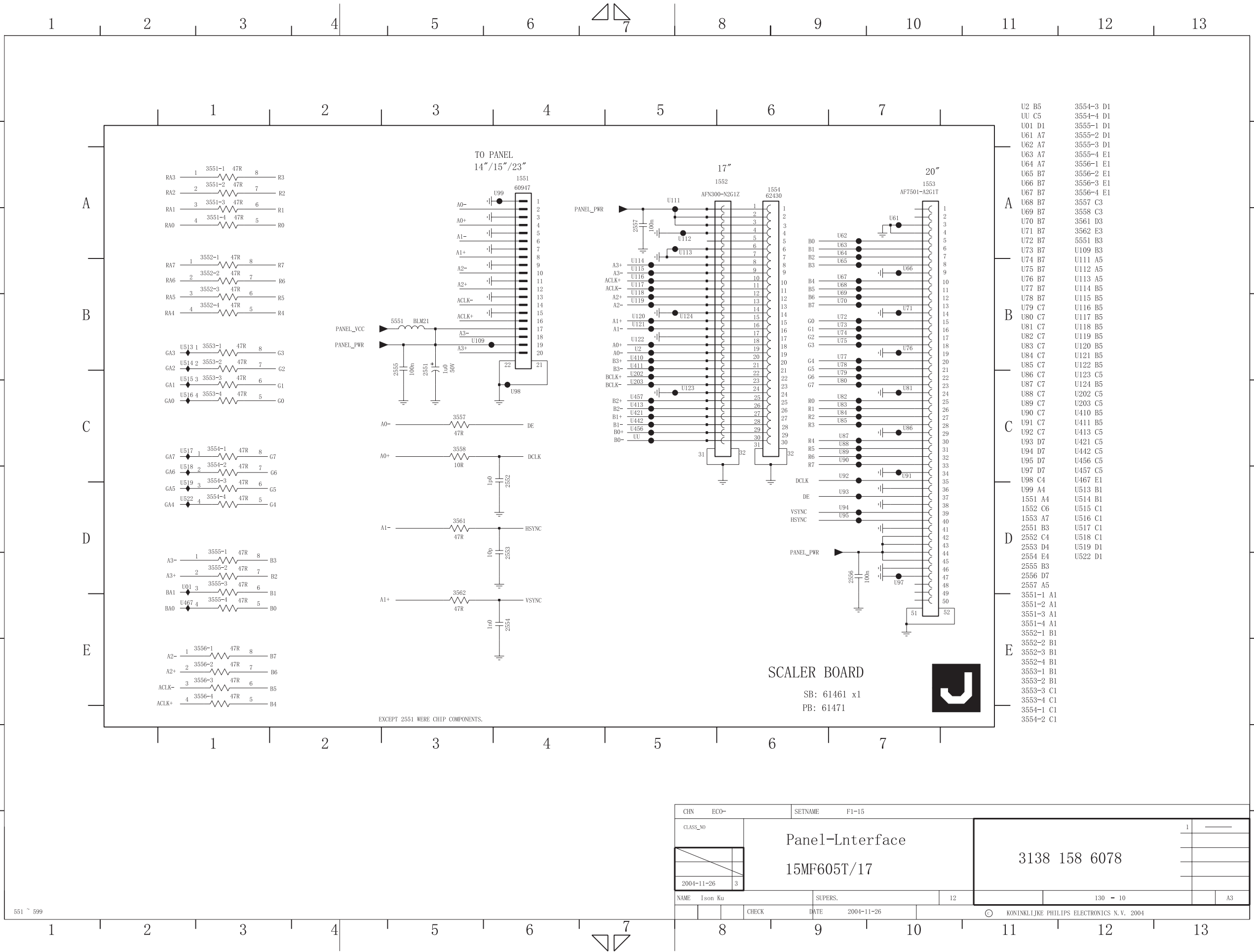
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| NAME       | Ison Ku | SUPERS.     | 12         |
| CHECK      |         | DATE        | 2004-11-26 |
|            |         |             | 130 - 9    |
|            |         |             | A3         |

Panel interface Diagram

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Sound DECODER DIAGRAM

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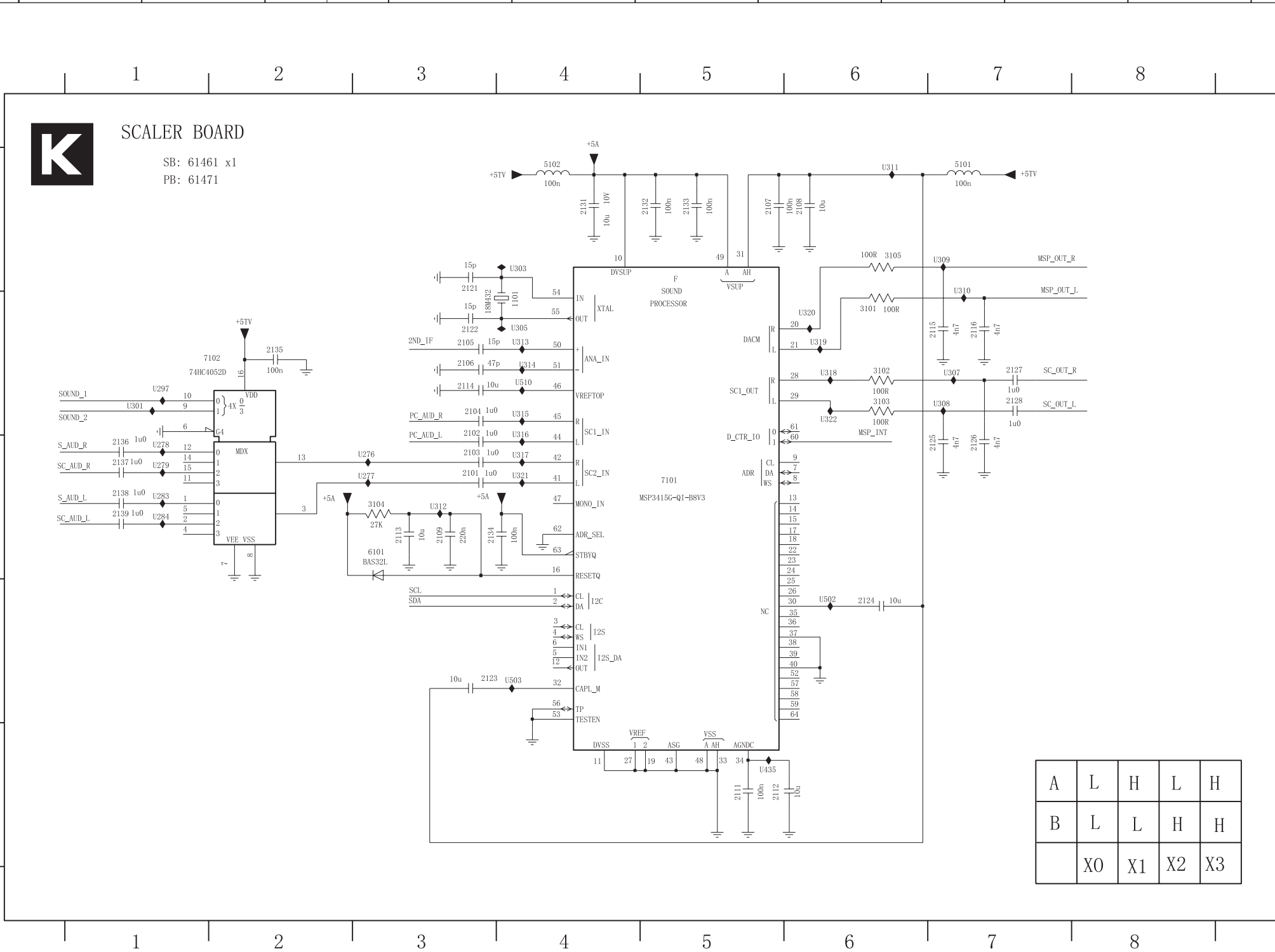


J



101 ~ 150

A  
B  
C  
D  
E  
F  
G  
H  
I  
J





AUDIO Diagram

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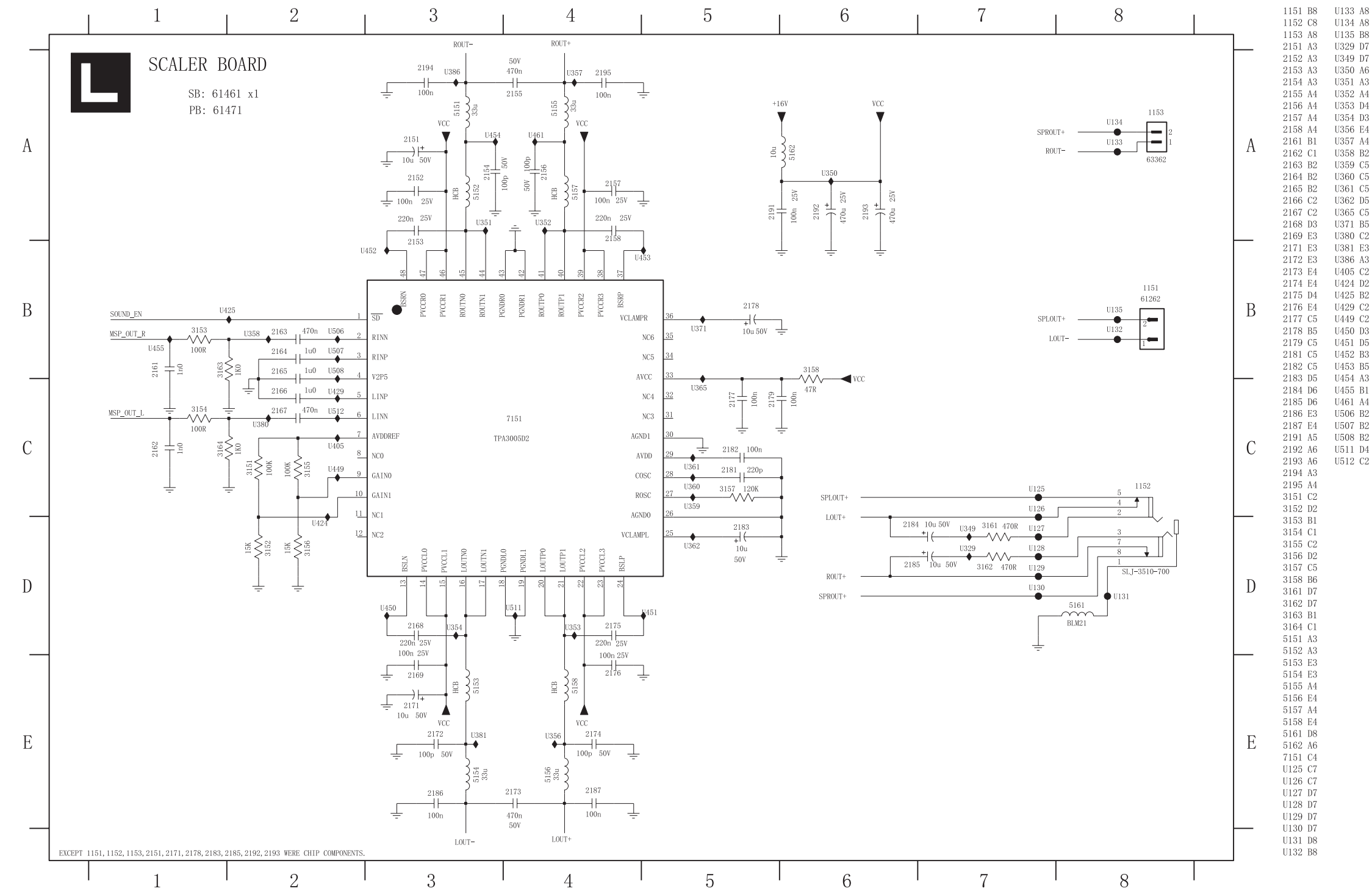


J



151 ~ 199

1 2 3 4 5 6 7 8 9 10 11 12 13



|   |             |          |            |
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| CLASS_NO                                  | AUDIO       |          | 1          |
|   | 15MF605T/17 |          |            |
| 2004-11-26                                | 3           |          |            |
| NAME                                      | Ison Ku     | SUPERS.  | 12         |
| CHECK                                     |             | DATE     | 2004-11-26 |
|   |             | 130 - 12 | A3         |
| KONINKLIJKE PHILIPS ELECTRONICS N.V. 2004 |             |          |            |

1 2 3 4 5 6 7 8 9 10 11 12 13

# SCALER BOARD C.B.A

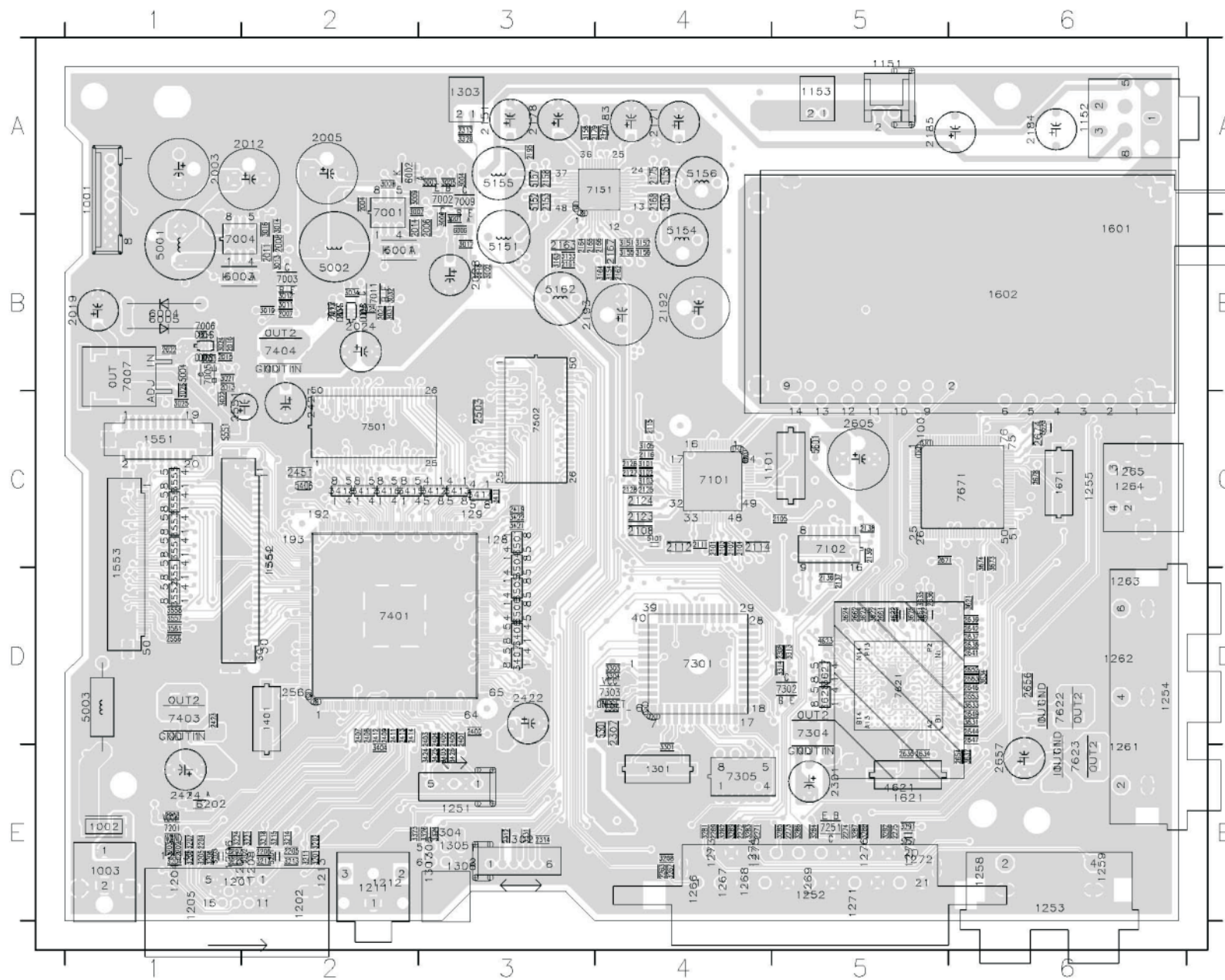
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f



|                  |                 |                          |         |
|------------------|-----------------|--------------------------|---------|
| CN: ECO-         |                 | MMD T5                   |         |
| CLASS NO. 3XX000 |                 | Scaler Board             |         |
|                  |                 | F1 15MF 605T             |         |
| 2004-11-26       |                 | 3138 103 6146            |         |
| NAME Ison Kuo/IF | SUPERS          | 2                        | 10      |
| CHECK            | DATE 2004-11-26 | ©                        | 132 - 1 |
|                  |                 | Philips Electronics N.V. |         |
|                  |                 | A3                       |         |



# PHILIP

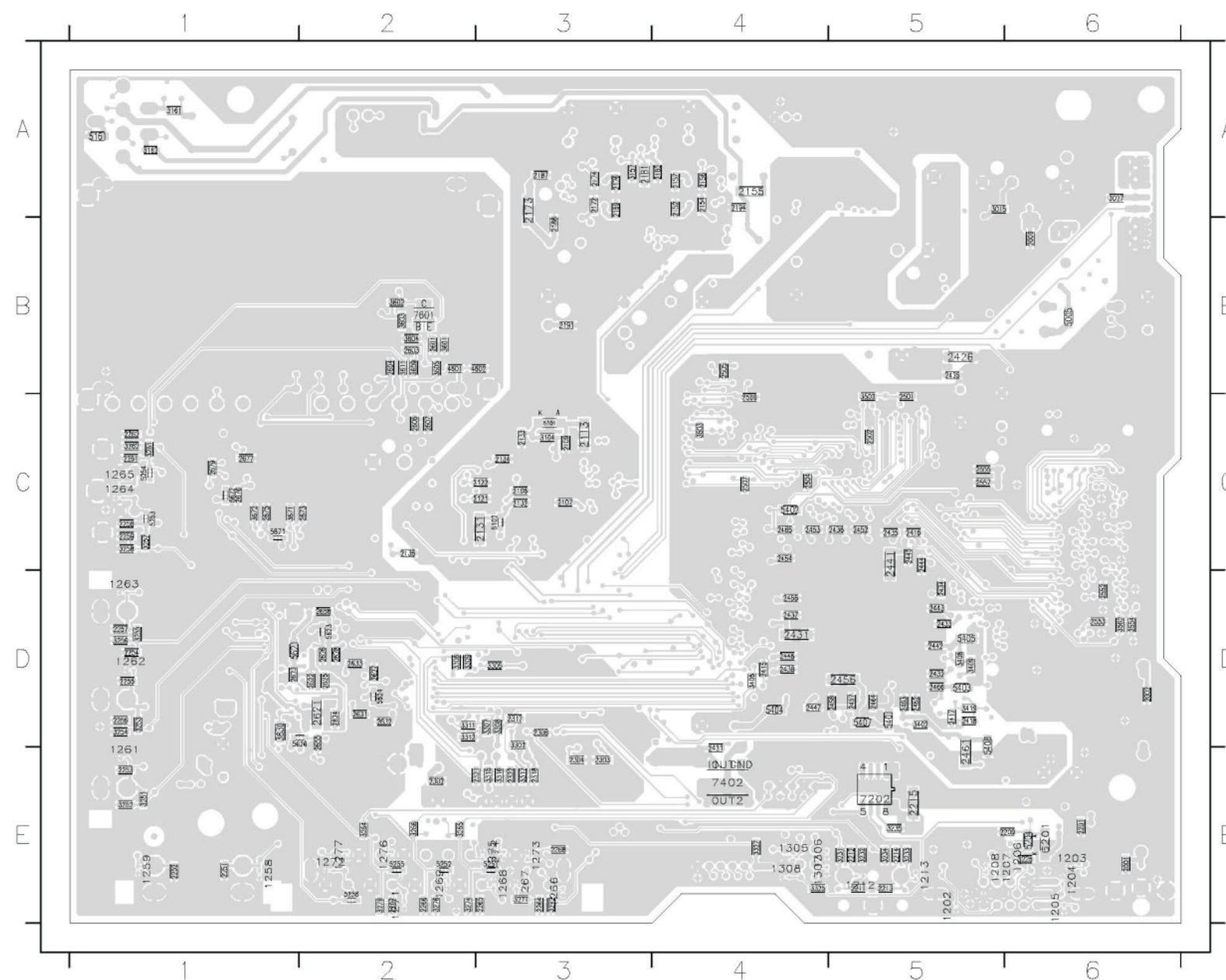



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e

f

[illegible]

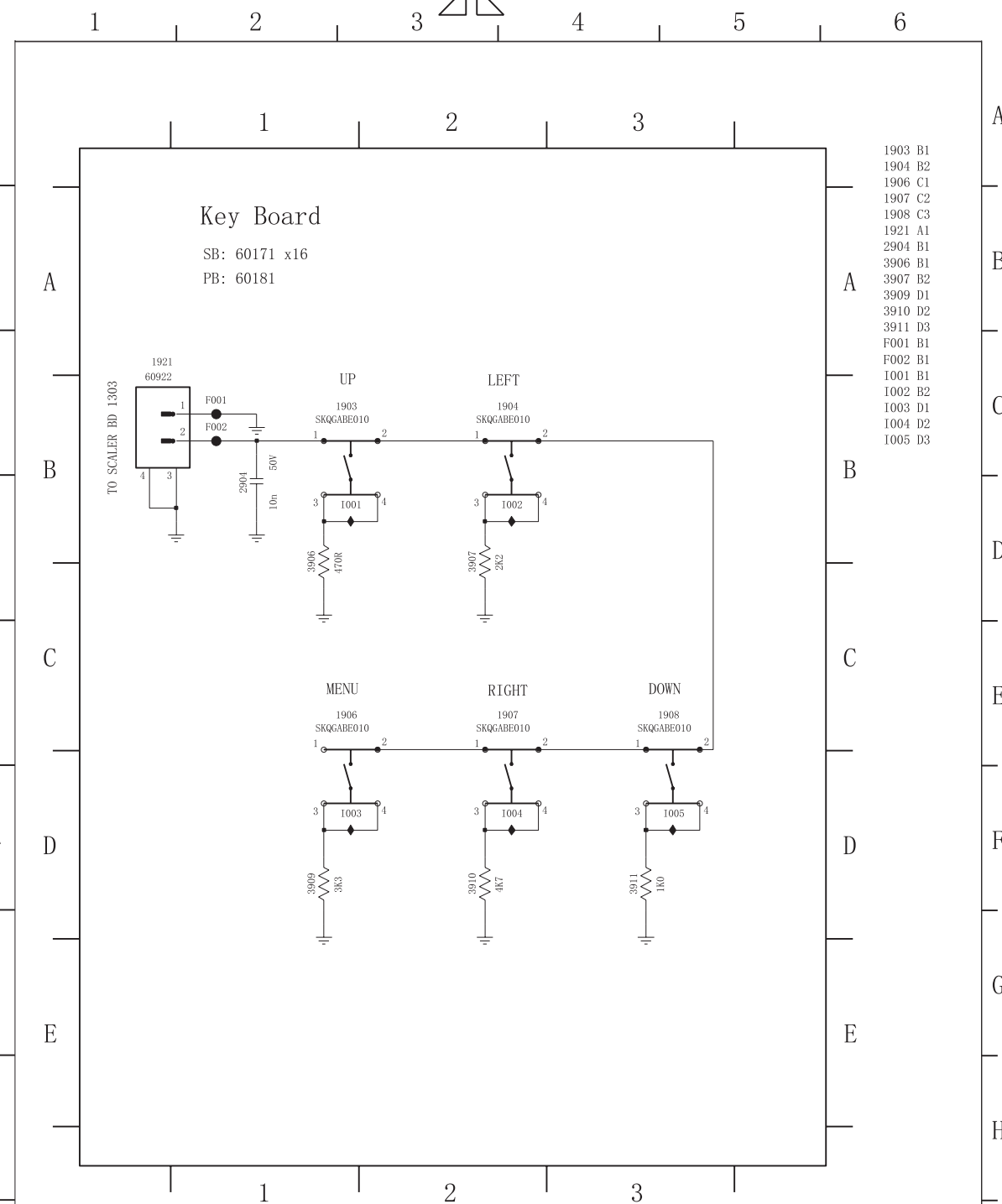
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|---|--|-----------------|--|--------------|--|--------------------------|--|---------|--|--------------|--|
| CN: ECO-  |  | MMD T5          |  |              |  |                          |  |         |  |              |  |
| CLASS NO.<br>3XX000   |  | Scaler Board    |  |              |  | 3138 103 6146            |  |         |  | I 2004-11-26 |  |
|  |  | 1               |  | F1 15MF 605T |  |                          |  |         |  |              |  |
|   |  | 2               |  |              |  |                          |  |         |  |              |  |
|   |  | 3               |  |              |  |                          |  |         |  |              |  |
| 2004-11-26  |  |                 |  |              |  |                          |  |         |  |              |  |
| NAME Ison Kuo/IF  |  | SUPERS          |  | 2            |  | 10                       |  | 132 - 2 |  | A3           |  |
| CHECK   |  | DATE 2004-11-26 |  | ©            |  | Philips Electronics N.V. |  |         |  |              |  |

## KEY AND IR BOARD DIAGRAM

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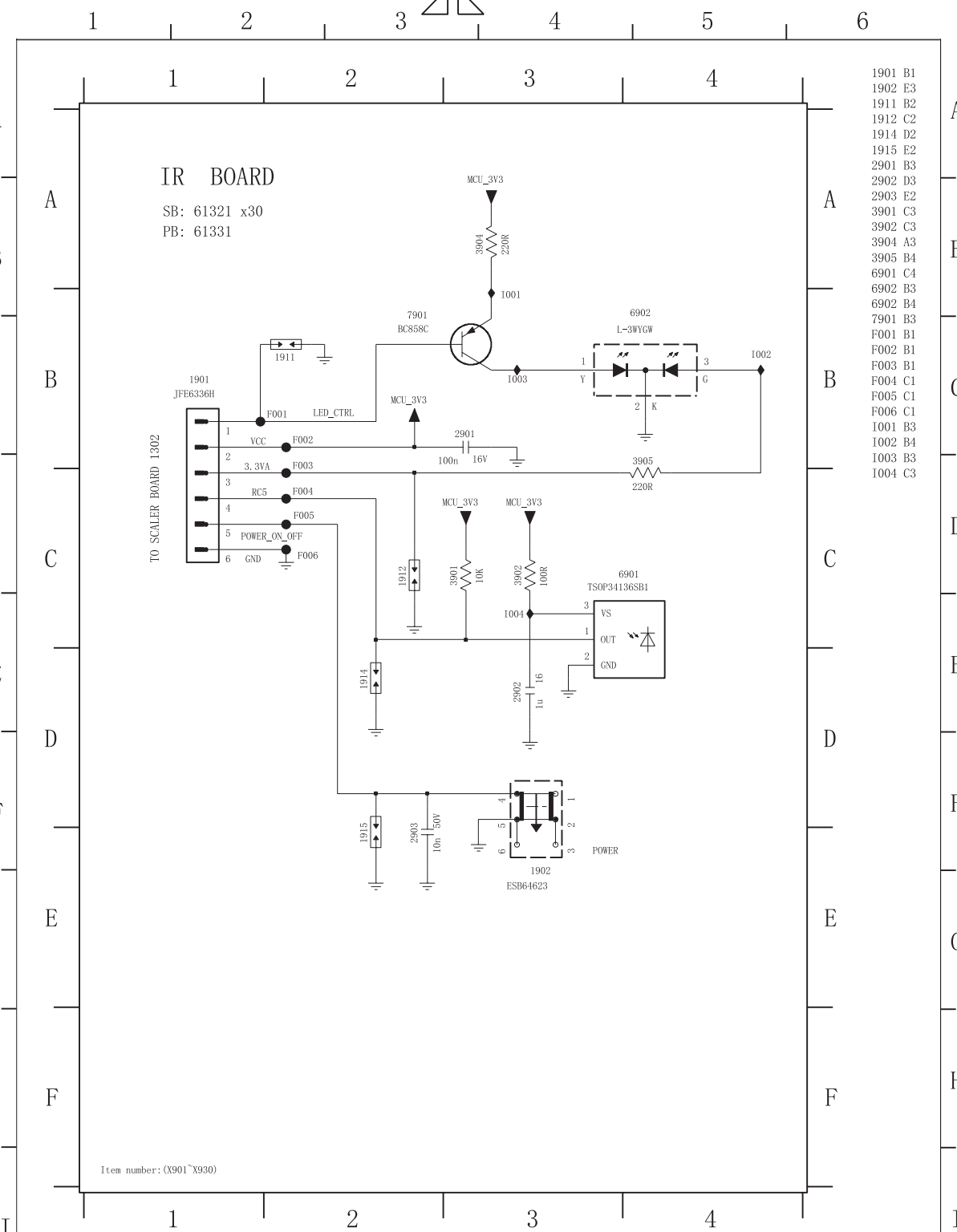
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3909 D1  
3910 D2  
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F001 B1  
F002 B1  
I001 B1  
I002 B2  
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I005 D3

[illegible]

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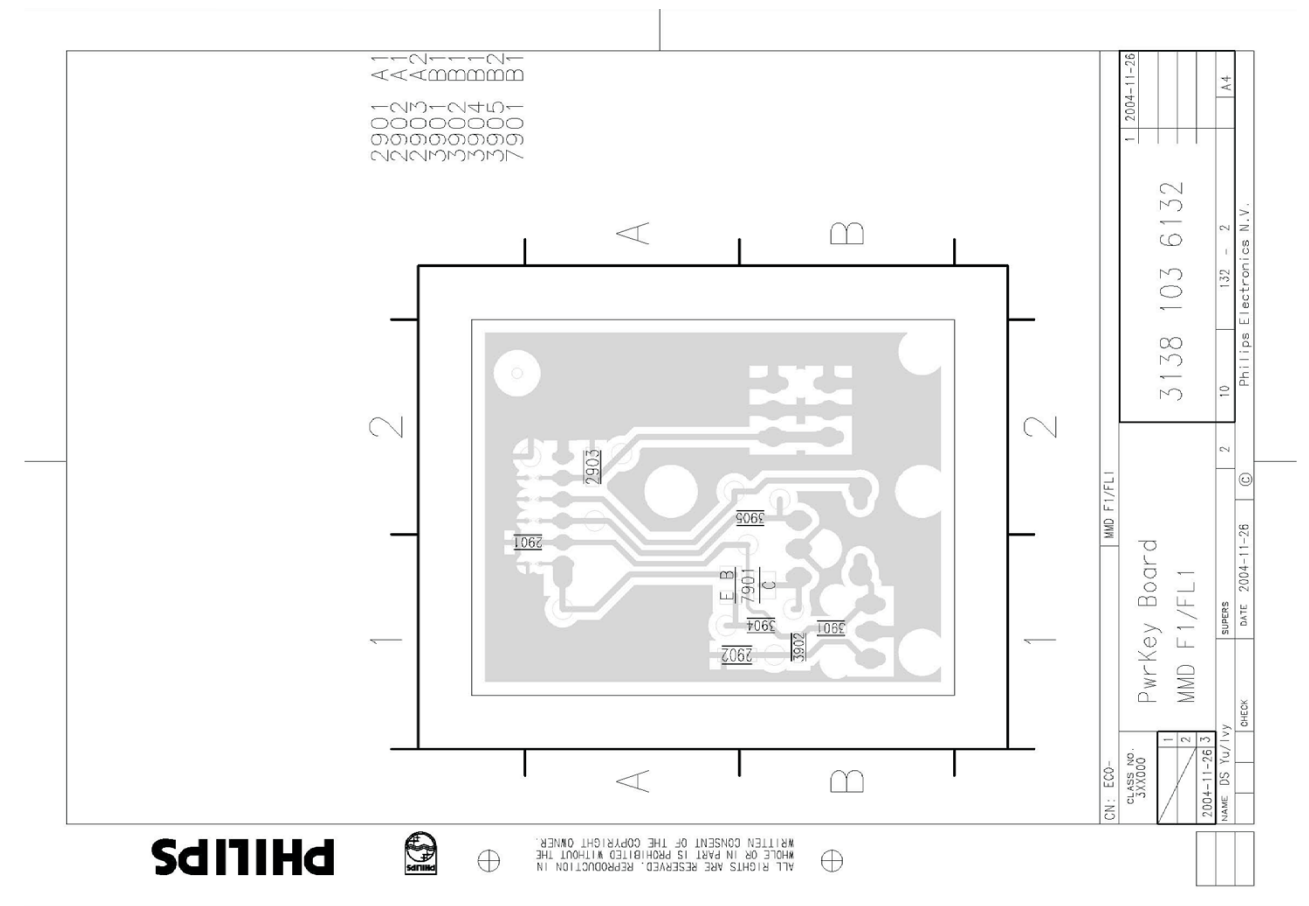
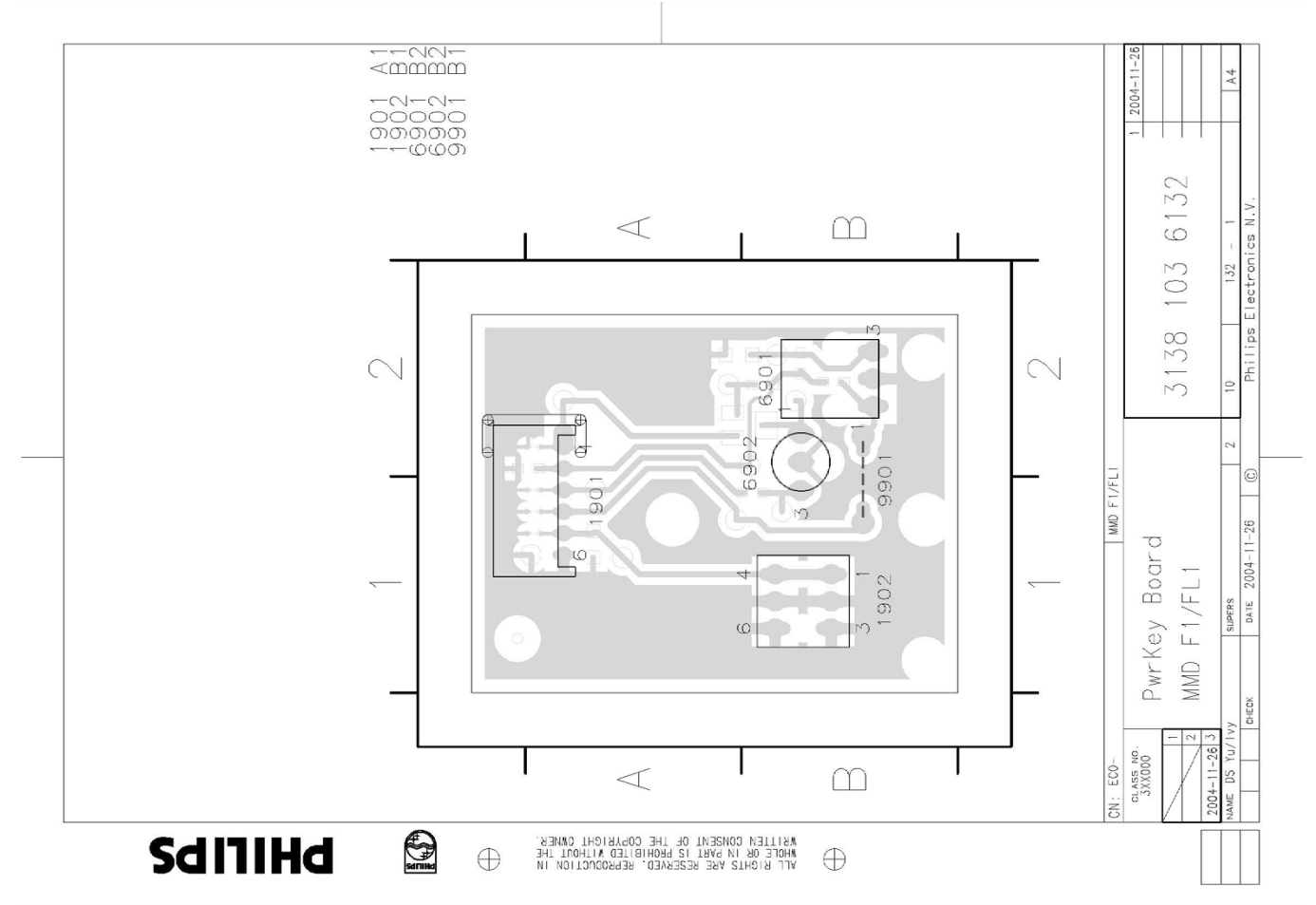
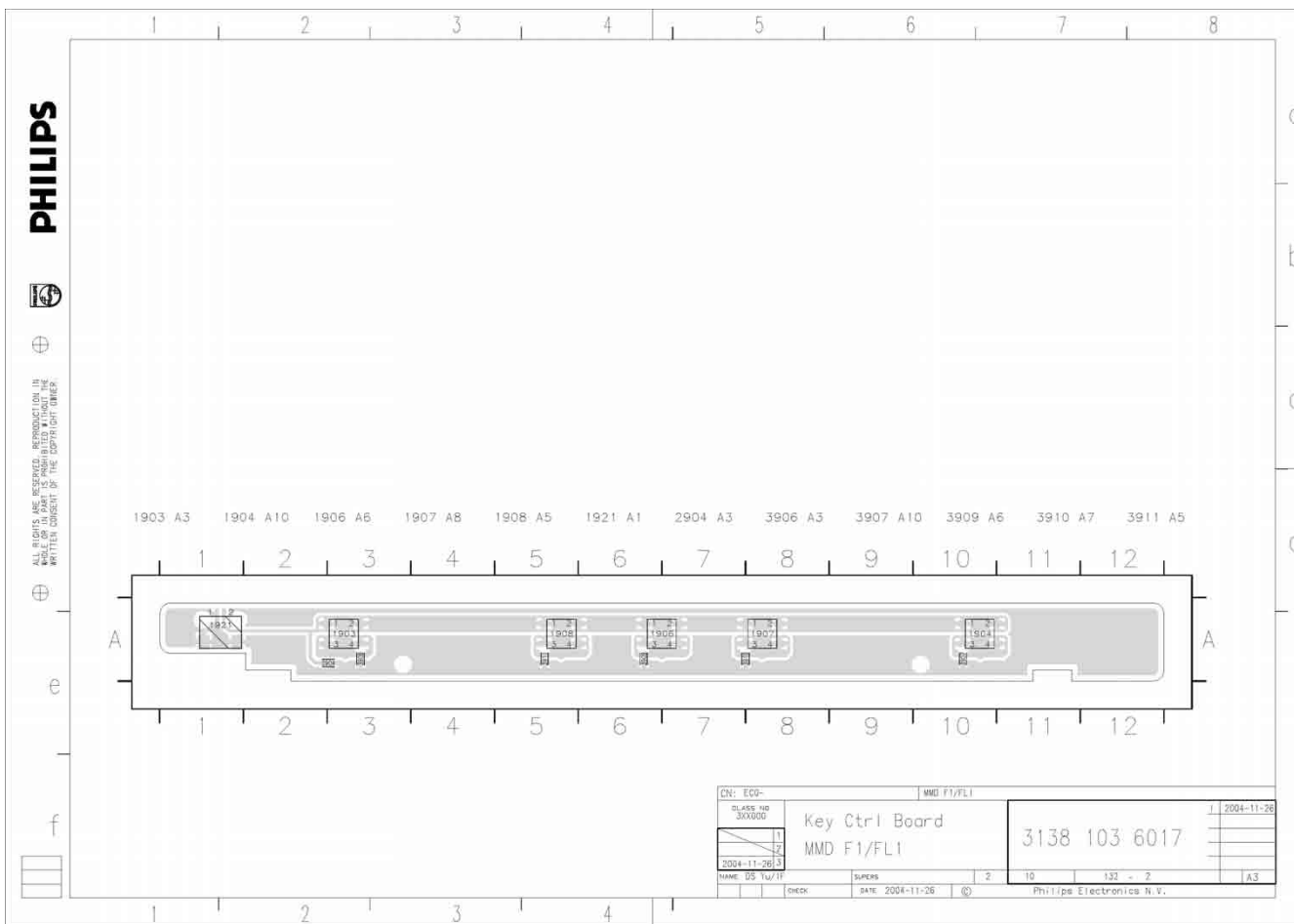
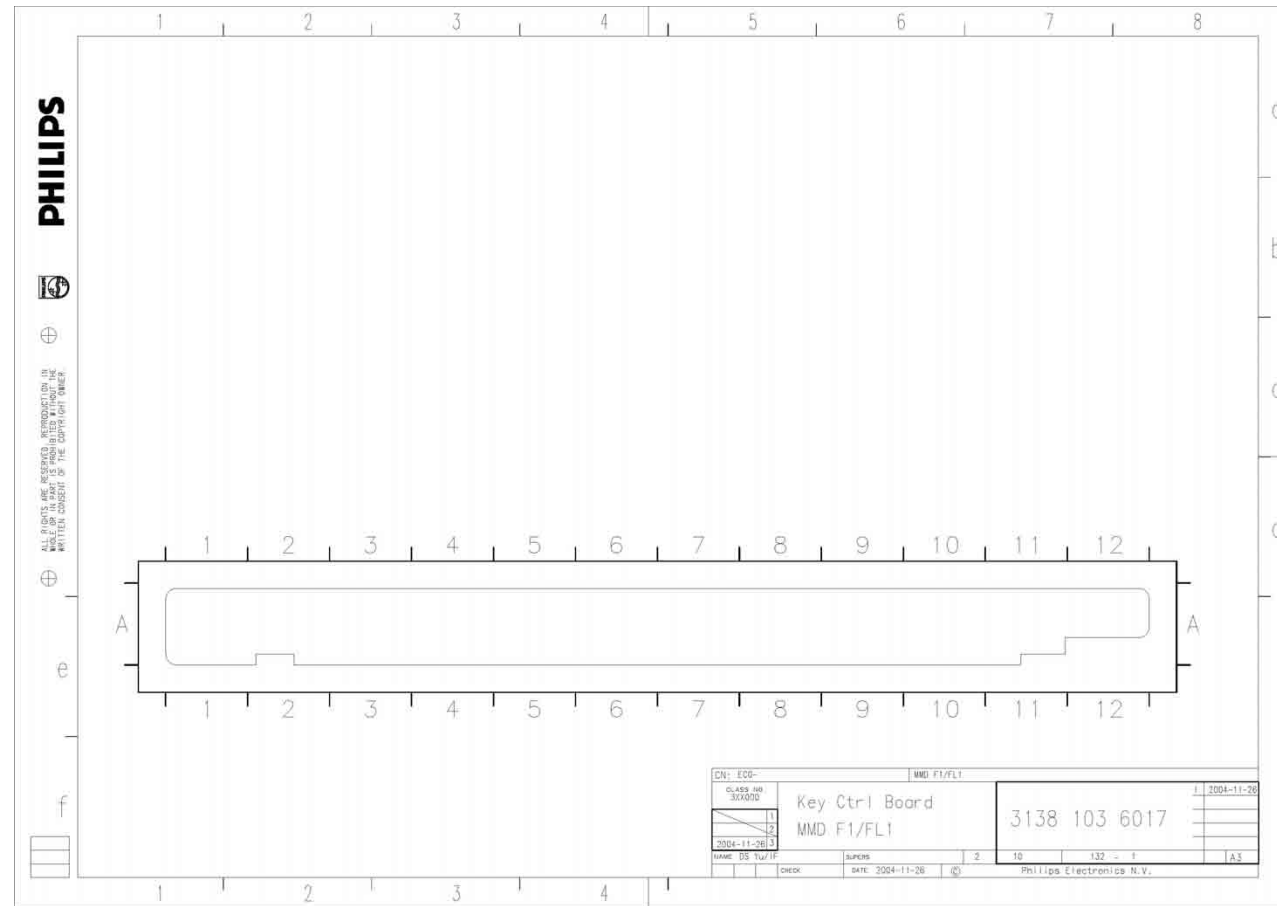
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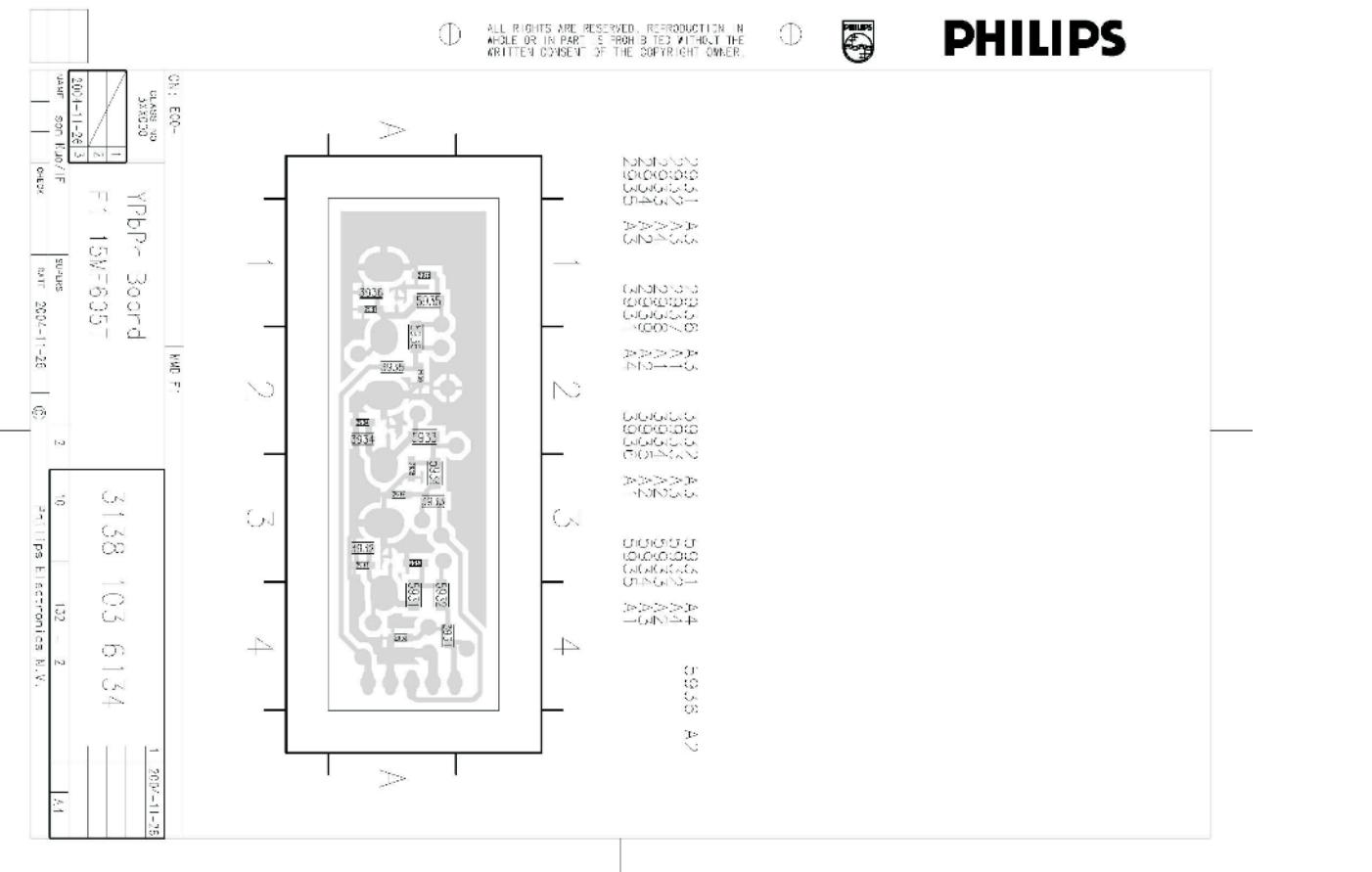
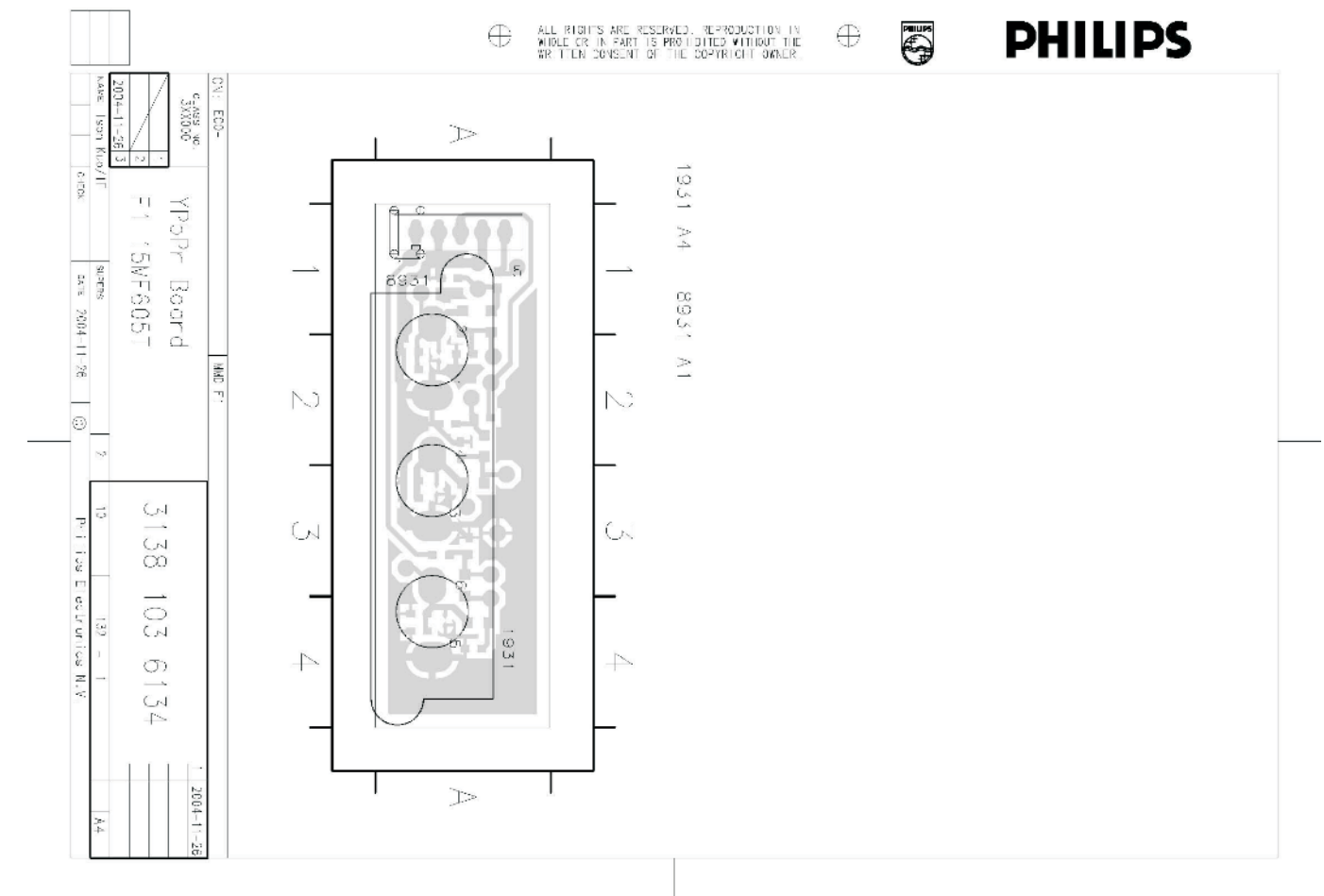
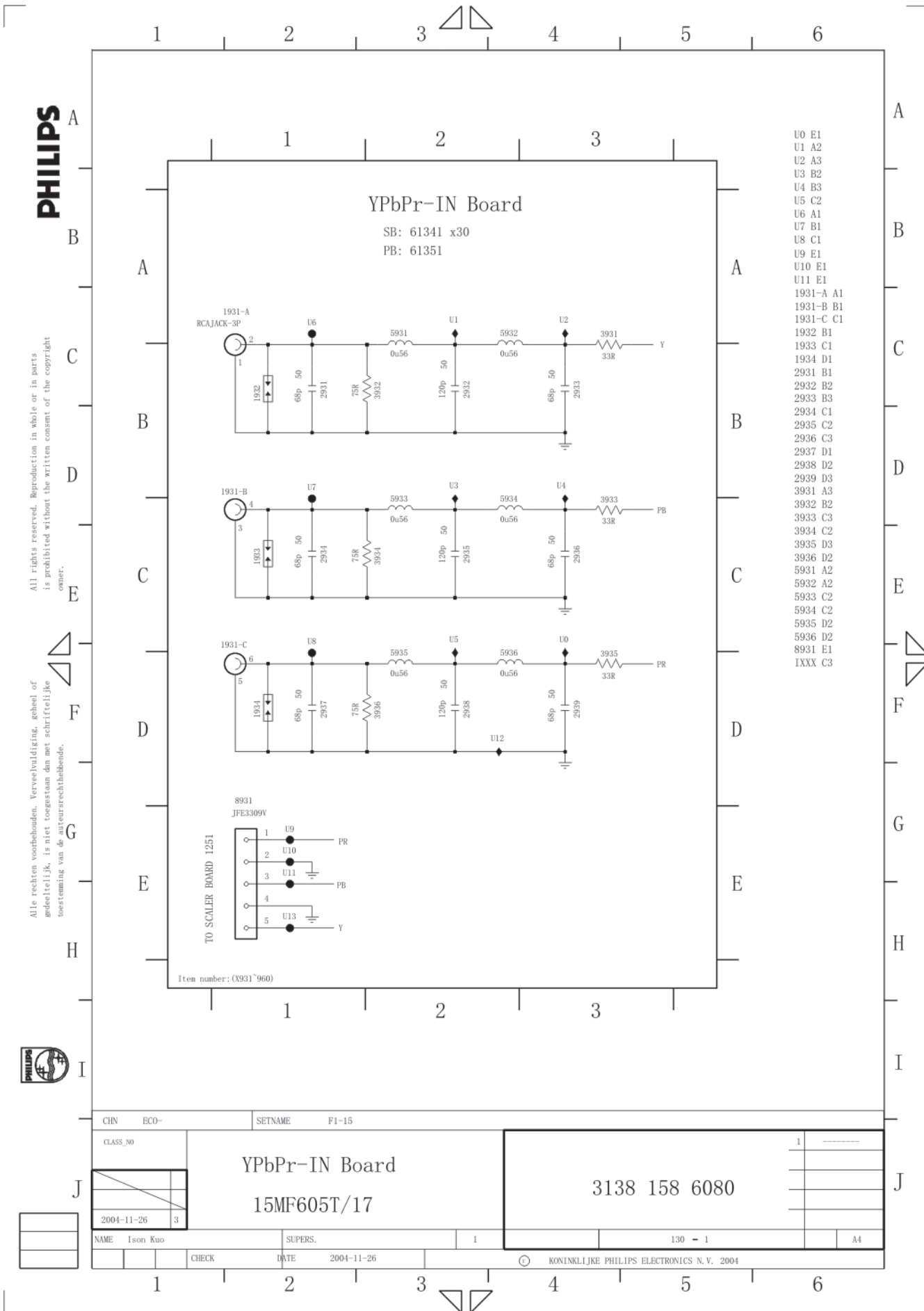
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3902 C3  
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6901 C4  
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F001 B1  
F002 B1  
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F004 C1  
F005 C1  
F006 C1  
I001 B3  
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I003 B3  
I004 C3

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|------------|--|-----------------------------|--|---------|--|---|--|
| CHN        |  | ECO-                        |  | SETNAME |  | F1-15   |  |
| CLASS_NO   |  | IR BOARD<br><br>15MF605T/17 |  |         |  | 3138 158 6081   |  |
|            |  |                             |  |         |  |   |  |
|            |  |                             |  |         |  |   |  |
|            |  |                             |  |         |  |   |  |
| 2004-11-26 |  | 3                           |  |         |  |   |  |
| NAME       |  | D. S. Yu / J. Cheng         |  | SUPERS. |  | 1   |  |
|            |  |                             |  |         |  | 130 - 1   |  |
|            |  | CHECK                       |  | DATE    |  | 2004-11-26  |  |
|            |  |                             |  |         |  | <input type="radio"/> KONINKLIJKE PHILIPS ELECTRONICS N.V. 2004 |  |

## KEY AND IR BOARD C.B.A



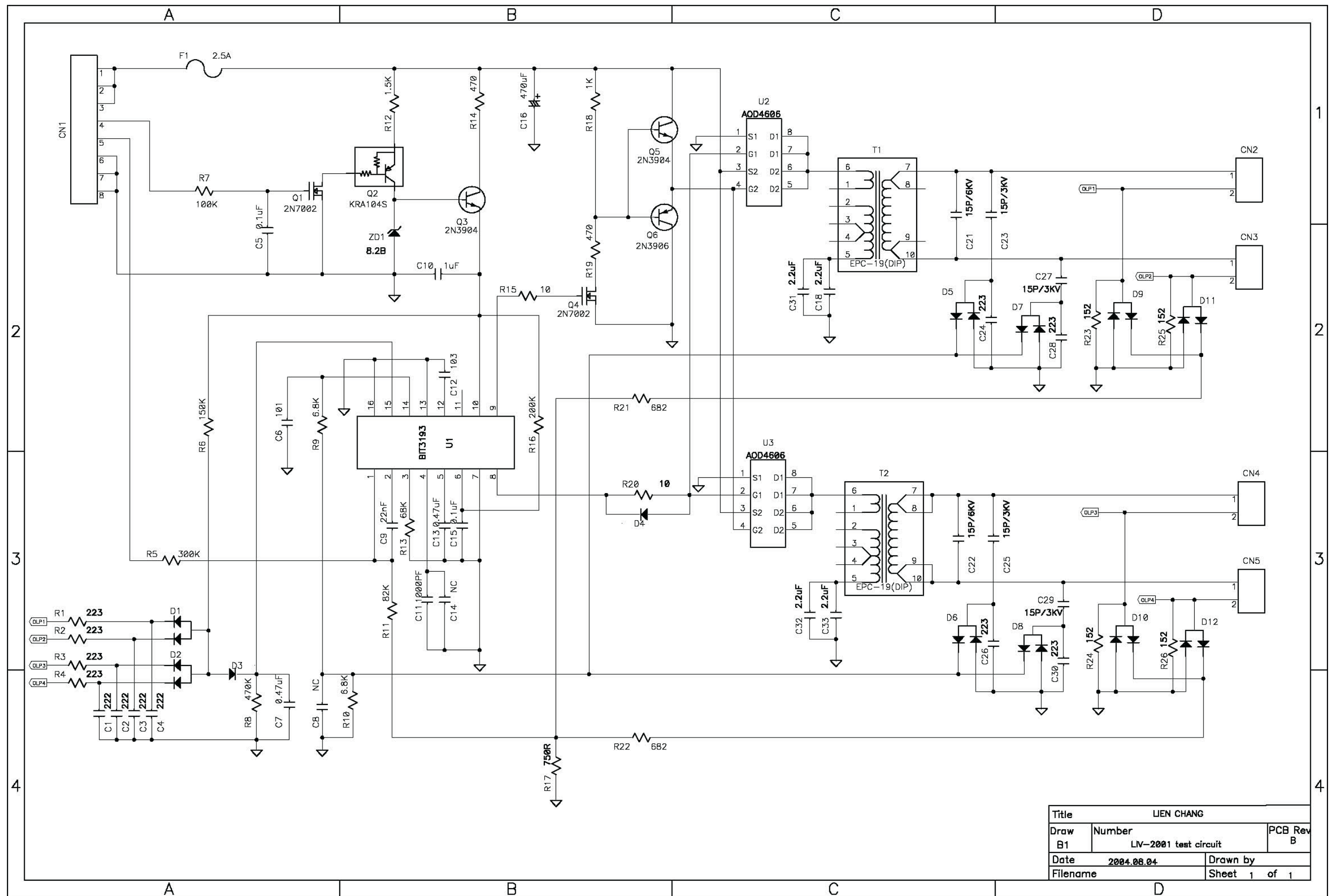
## YPbPr-IN BOARD AND C.B.A





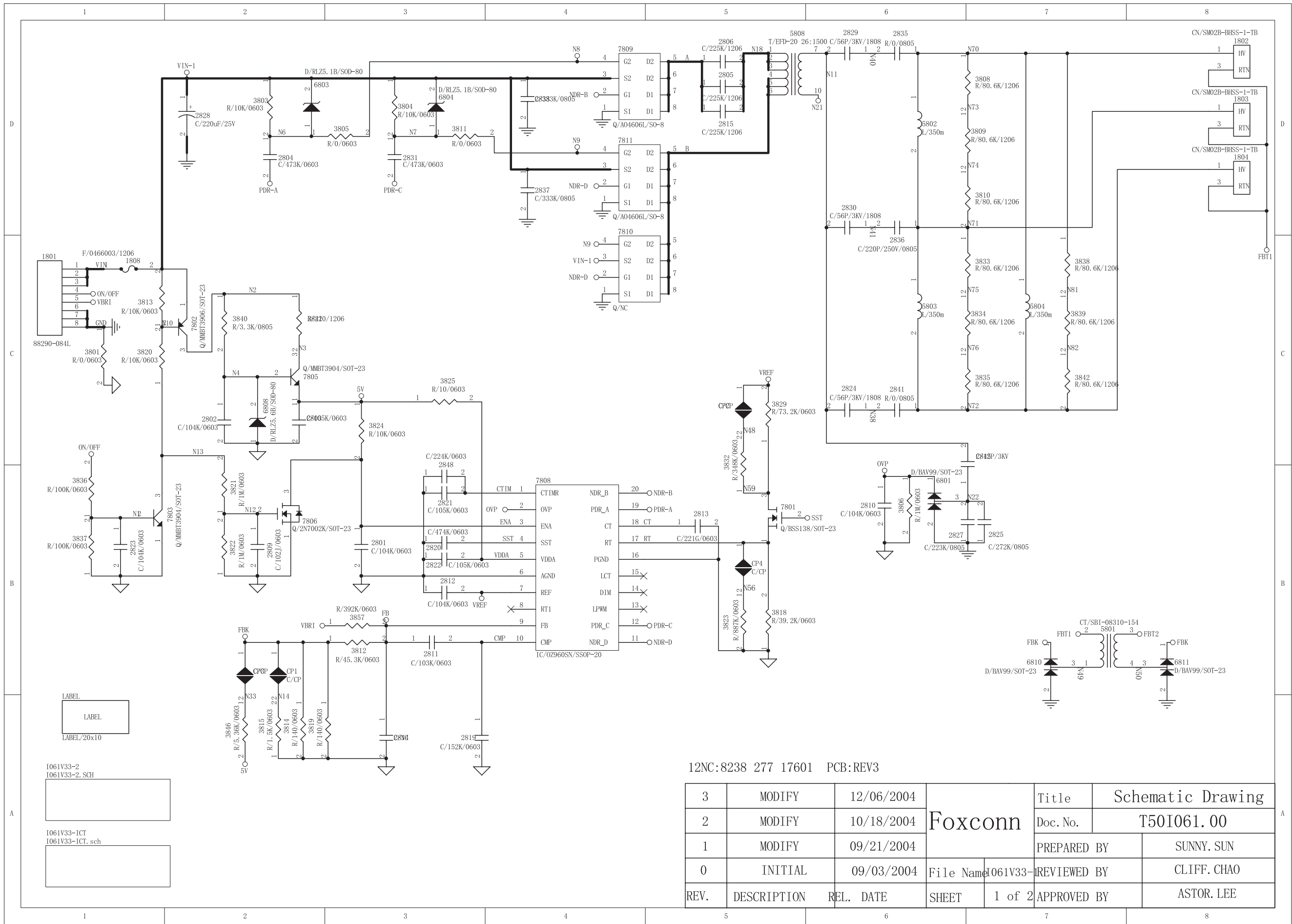
## Inverter board diagram(15MF605T/17)

◀◀ Go to cover page

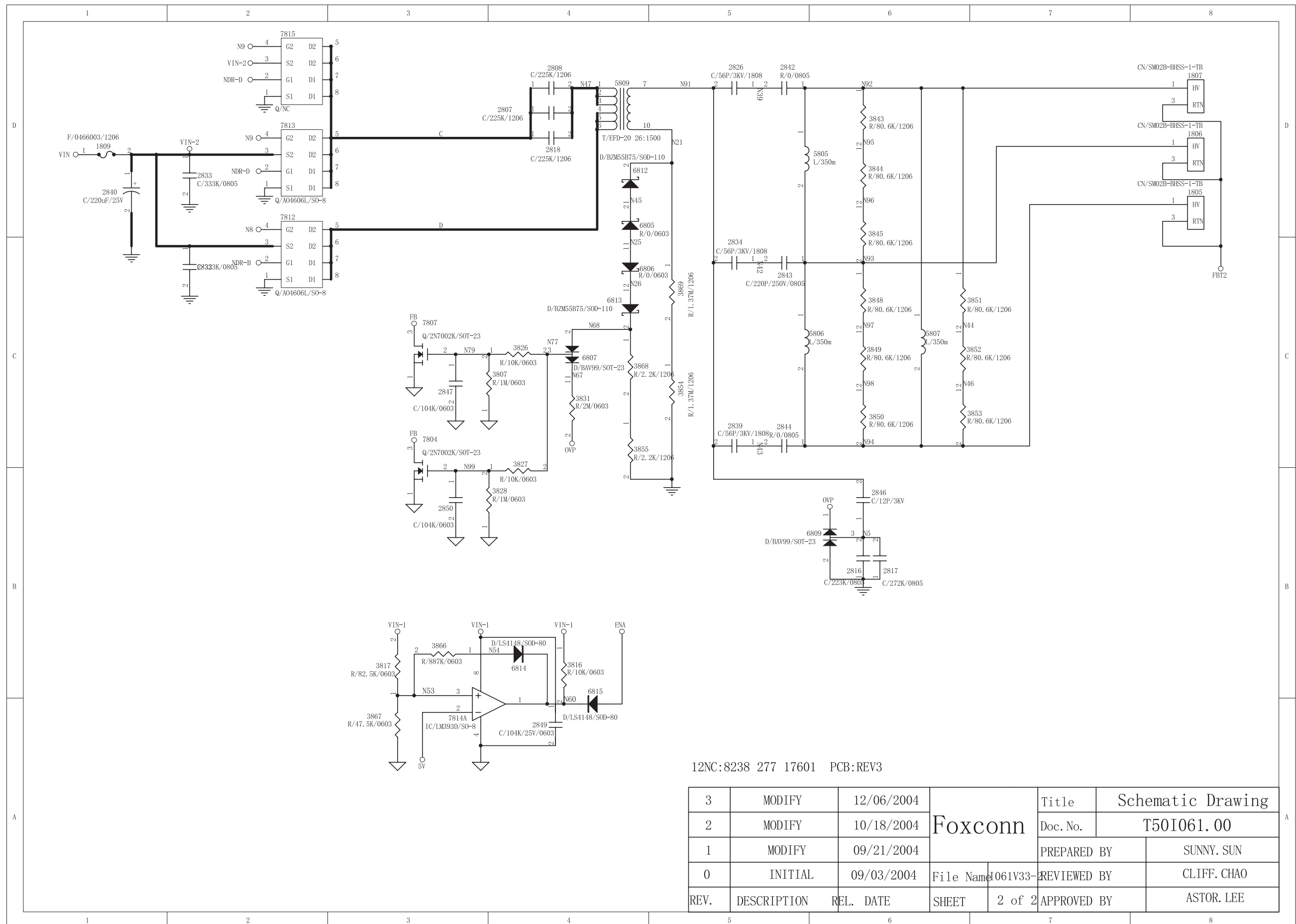


|                  |                              |           |
|------------------|------------------------------|-----------|
| Title LIEN CHANG |                              |           |
| Draw B1          | Number LIV-2001 test circuit | PCB Rev B |
| Date 2004.08.04  | Drawn by                     |           |
| Filename         | Sheet 1                      | of 1      |

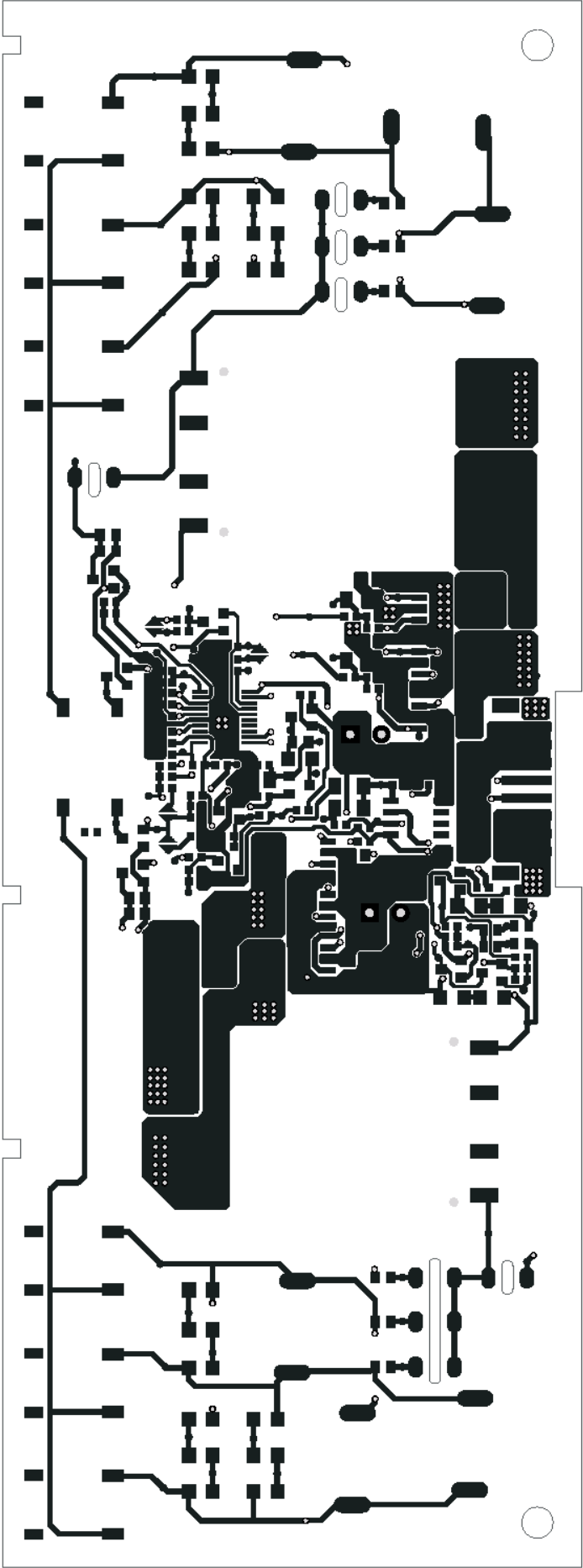
Inverter board diagram(20MF605T/17)

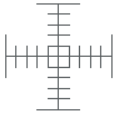


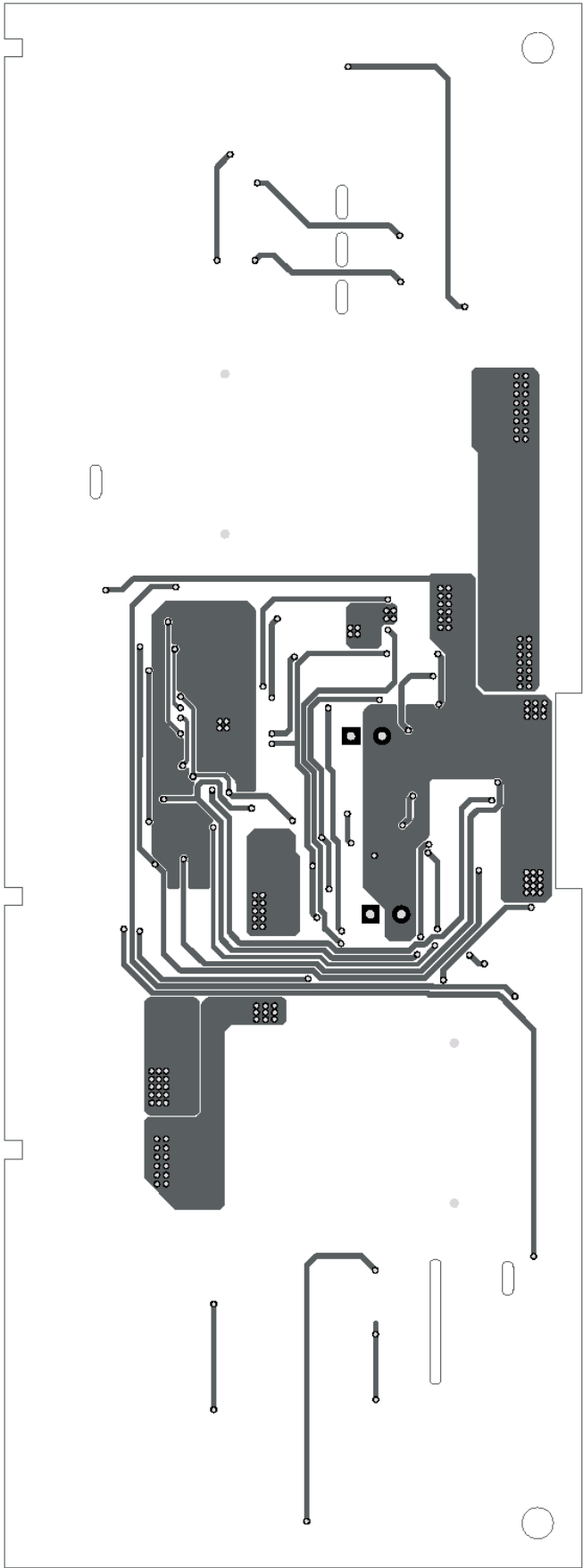
## Inverter board diagram(20MF605T/17)



Inverter board C.B.A(20MF605T/17)



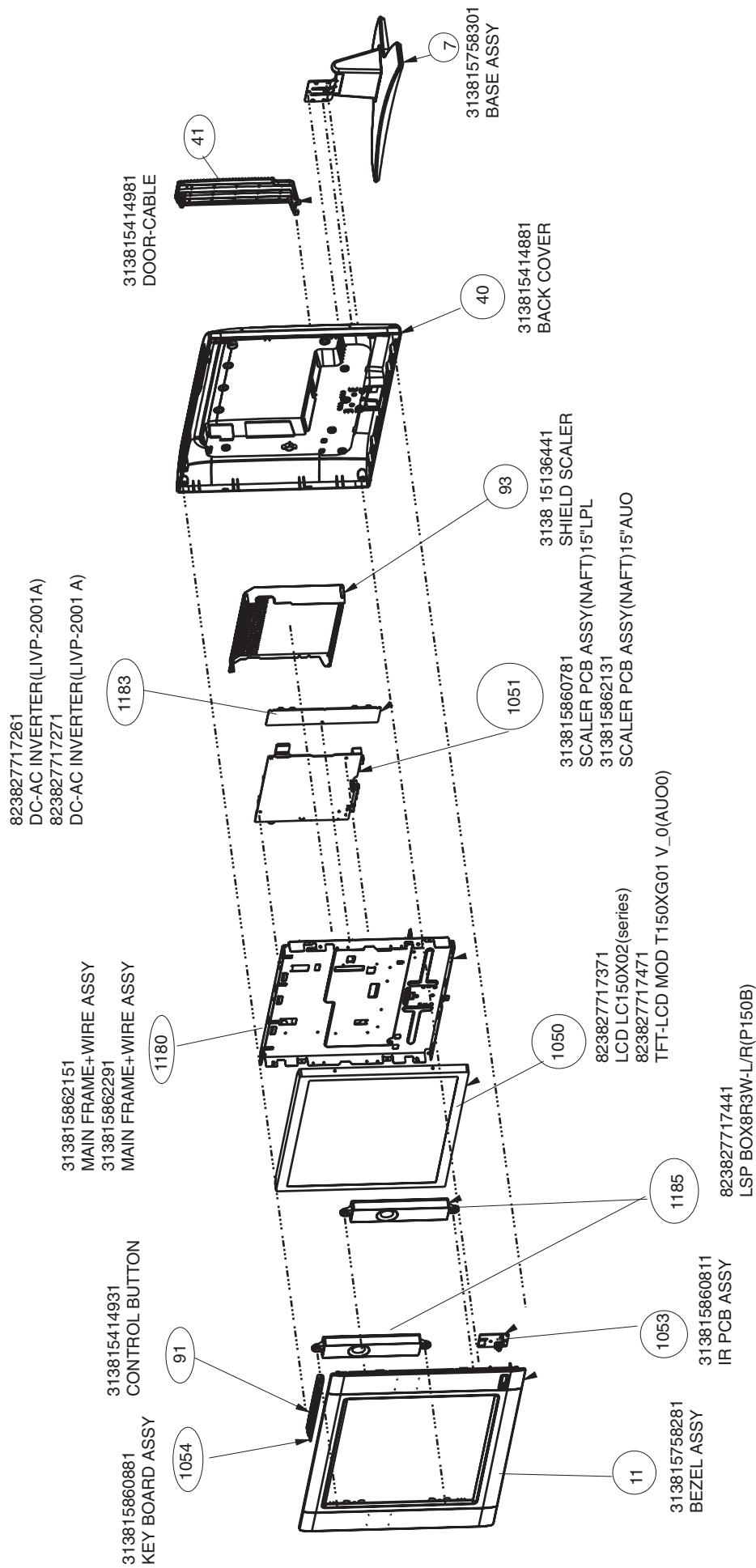
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| <b>Foxconn</b><br>SCALE 10MM<br> | <b>FLM NUMBER</b>         | T501061-00-2C1 -04 |            |  |
|  | <b>Mechanical Layer 1</b> |                    |            |  |
|  | <b>P/N</b>                | 19.2096.33         |            |  |
|  | <b>Rev.</b>               | 33                 | 7-Dec-2004 |  |



|   |                           |                    |            |  |
|---|---------------------------|--------------------|------------|--|
| <b>Foxconn</b><br>SCALE 10MM<br> | <b>FLM NUMBER</b>         | T501061-00-2C2 -04 |            |  |
|   | <b>Mechanical Layer 1</b> |                    |            |  |
|   | <b>P/N</b>                | 19.2096.33         |            |  |
|   | <b>Rev.</b>               | 33                 | 7-Dec-2004 |  |

Exploded View

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|      |              |                                |
|------|--------------|--------------------------------|
| 0011 | 313815758281 | BEZEL ASSY                     |
| 0030 | 313815414871 | BEZEL                          |
| 0031 | 313815414921 | LENS-IR                        |
| 0032 | 313815414911 | POWER BUTTON                   |
| 0007 | 313815758301 | BASE ASSY                      |
| 0040 | 313815414881 | BACK COVER                     |
| 0090 | 313815523361 | PLASTIC COVER                  |
| 0091 | 313815414931 | CONTROL BUTTON                 |
| 0092 | 313815522331 | SMART TIPS-WALL MOUNTING       |
| 7901 | 932217439685 | TRA SIG SM BC857C (KEC0) R     |
| 6901 | 313815862261 | IR + HOLDER ASSY               |
| 6901 | 932220313667 | IR RECEIVER TSOP34136SB1 L     |
| 6902 | 313815862171 | LED + HOLDER ASSY              |
| 6902 | 932214603682 | LED VS L-3WYGW (KIEL) B        |
| 6001 | 932221745685 | DIO REC SM SSA34 (VISH) R      |
| 6002 | 932220347685 | DIO REG SM BZX84-B16 (VISH) R  |
| 6003 | 932221745685 | DIO REC SM SSA34 (VISH) R      |
| 6006 | 933913910115 | DIO SIG SM BAS32L (PHSE) R     |
| 6101 | 933913910115 | DIO SIG SM BAS32L (PHSE) R     |
| 6201 | 933913910115 | DIO SIG SM BAS32L (PHSE) R     |
| 6202 | 933913910115 | DIO SIG SM BAS32L (PHSE) R     |
| 7001 | 932219076668 | IC SM L5972D (ST00) R          |
| 7002 | 932217438685 | TRA SIG SM BC847C (KEC0) R     |
| 7003 | 932217438685 | TRA SIG SM BC847C (KEC0) R     |
| 7004 | 932219076668 | IC SM L5972D (ST00) R          |
| 7005 | 932217438685 | TRA SIG SM BC847C (KEC0) R     |
| 7006 | 932216638668 | FET POW SM SI5441DC-E3 (VISH)R |
| 7009 | 932217438685 | TRA SIG SM BC847C (KEC0) R     |
| 7011 | 932217438685 | TRA SIG SM BC847C (KEC0) R     |
| 7012 | 932216638668 | FET POW SM SI5441DC-E3 (VISH)R |
| 7101 | 932219412671 | IC SM MSP3445G-QI-B8V3(MIAS) Y |
| 7102 | 933714830653 | IC SM 74HC4052D (PHSE) R       |
| 7151 | 932222035668 | IC SM TPA3005D2PHP (TI00) R    |
| 7201 | 935245720165 | IC SM 74HCT1G14GW (PHSE) R     |
| 7202 | 932216972682 | IC SM AT24C02N-10SC-2.7(ATME)L |
| 7301 | 313815862181 | CPU ASSY (LPL -F1 15")         |
| 7301 | 823827716771 | NT68F632AL CPU                 |
| 7302 | 932217438685 | TRA SIG SM BC847C (KEC0) R     |
| 7303 | 932219183685 | IC SM LM809M3-2.93 NOPB(NSC0)R |
| 7304 | 932222076668 | IC SM AME1117CCGTZ (ST00) R    |
| 7305 | 313815862211 | EEPROM ASSY (LPL-F1 15")       |
| 7305 | 932218650682 | IC AT24C16A-10PI-2.7 (ATME) L  |
| 7401 | 932222013671 | IC SM MST51512L-LF (MSTA) Y    |
| 7402 | 932222075668 | IC SM AME1117BCGTZ (ST00) R    |
| 7403 | 932222076668 | IC SM AME1117CCGTZ (ST00) R    |
| 7404 | 932222076668 | IC SM AME1117CCGTZ (ST00) R    |
| 7502 | 932216677682 | IC SM M12L16161A-7T (ESMT) L   |
| 7501 | 932216677682 | IC SM M12L16161A-7T (ESMT) L   |
| 7621 | 935276561518 | IC SM SAA7119E/V2/G (PHSE) R   |
| 7622 | 932222077668 | IC SM AME1117ECGTZ (ST00) R    |
| 7623 | 932222076668 | IC SM AME1117CCGTZ (ST00) R    |



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|      |              |                    |              |      |              |                          |            |      |              |                               |            |
|------|--------------|--------------------|--------------|------|--------------|--------------------------|------------|------|--------------|-------------------------------|------------|
| 2207 | 223886715568 | CER1 0603 NP0 50V  | 5P6 PM0P5 R  | 3154 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 3422 | 212211805635 | RST SM 0603 RC0603            | 10R PM5 R  |
| 2269 | 223886715331 | CER1 0603 NP0 50V  | 330P PM5 R   | 3155 | 232270260104 | RST SM 0603 RC21         | 100K PM5 R | 3424 | 232270260689 | RST SM 0603 RC21              | 68R PM5 R  |
| 2272 | 223886715331 | CER1 0603 NP0 50V  | 330P PM5 R   | 3156 | 212211805672 | RST SM 0603 RC0603       | 15K PM5 R  | 3425 | 232270260689 | RST SM 0603 RC21              | 68R PM5 R  |
| 2301 | 202203100367 | ELCAP SK 16V S     | 47U PM20 B   | 3157 | 212211805944 | RST SM 0603 RC0603       | 120K PM5 R | 3426 | 232270260689 | RST SM 0603 RC21              | 68R PM5 R  |
| 2305 | 223858615623 | CER2 0603 X7R 50V  | 1N PM10 R    | 3158 | 212211805639 | RST SM 0603 RC0603       | 47R PM5 R  | 3501 | 235003510229 | RST NETW SM ARV24 4X 22R      | PM5 R      |
| 2307 | 222224119876 | CER2 1206 Y5V 10V  | 10U P8020 R  | 3161 | 232270260471 | RST SM 0603 RC21         | 470R PM5 R | 3502 | 232270260472 | RST SM 0603 RC21              | 4K7 PM5 R  |
| 2308 | 223824619863 | CER2 0603 Y5V 10V  | 1U P8020 R   | 3162 | 232270260471 | RST SM 0603 RC21         | 470R PM5 R | 3503 | 232270260472 | RST SM 0603 RC21              | 4K7 PM5 R  |
| 2312 | 223858615636 | CER2 0603 X7R 50V  | 10N PM10 R   | 3201 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 3504 | 235003510229 | RST NETW SM ARV24 4X 22R      | PM5 R      |
| 2313 | 223858615636 | CER2 0603 X7R 50V  | 10N PM10 R   | 3202 | 232270260472 | RST SM 0603 RC21         | 4K7 PM5 R  | 3505 | 235003510229 | RST NETW SM ARV24 4X 22R      | PM5 R      |
| 2314 | 223858615636 | CER2 0603 X7R 50V  | 10N PM10 R   | 3203 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 3506 | 235003510229 | RST NETW SM ARV24 4X 22R      | PM5 R      |
| 2401 | 223878615649 | CER2 0603 X7R 16V  | 100N PM10 R  | 3204 | 232270260472 | RST SM 0603 RC21         | 4K7 PM5 R  | 3609 | 212211805639 | RST SM 0603 RC0603            | 47R PM5 R  |
| 2402 | 223878615649 | CER2 0603 X7R 16V  | 100N PM10 R  | 3205 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 3611 | 232270260279 | RST SM 0603 RC21              | 27R PM5 R  |
| 2403 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3206 | 232270260472 | RST SM 0603 RC21         | 4K7 PM5 R  | 3624 | 232270260472 | RST SM 0603 RC21              | 4K7 PM5 R  |
| 2404 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3207 | 232270260472 | RST SM 0603 RC21         | 4K7 PM5 R  | 3625 | 232270260101 | RST SM 0603 RC21              | 100R PM5 R |
| 2405 | 223858615623 | CER2 0603 X7R 50V  | 1N PM10 R    | 3208 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 3627 | 235003510101 | RST NETW SM ARV24 4X100R      | PM5 R      |
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| 2407 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3213 | 212211805642 | RST SM 0603 RC0603       | 75R PM5 R  | 3632 | 212211805639 | RST SM 0603 RC0603            | 47R PM5 R  |
| 2408 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3214 | 232270260689 | RST SM 0603 RC21         | 68R PM5 R  | 3633 | 212211805639 | RST SM 0603 RC0603            | 47R PM5 R  |
| 2409 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3215 | 232270260689 | RST SM 0603 RC21         | 68R PM5 R  | 3634 | 212211805639 | RST SM 0603 RC0603            | 47R PM5 R  |
| 2411 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3217 | 212211805642 | RST SM 0603 RC0603       | 75R PM5 R  | 3635 | 212211805639 | RST SM 0603 RC0603            | 47R PM5 R  |
| 2412 | 223858615623 | CER2 0603 X7R 50V  | 1N PM10 R    | 3218 | 232270260689 | RST SM 0603 RC21         | 68R PM5 R  |      |              |                               |            |
| 2413 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3221 | 232270260689 | RST SM 0603 RC21         | 68R PM5 R  | 5001 | 313818875691 | COI CHOKE 35UH 82M OHM        | DR10X8     |
| 2414 | 223878615645 | CER2 0603 X7R 16V  | 47N PM10 R   | 3223 | 212211805642 | RST SM 0603 RC0603       | 75R PM5 R  | 5002 | 313818875691 | COI CHOKE 35UH 82M OHM        | DR10X8     |
| 2419 | 223886715568 | CER1 0603 NP0 50V  | 5P6 PM0P5 R  | 3224 | 232270260689 | RST SM 0603 RC21         | 68R PM5 R  | 5003 | 243853598058 | IND FXD BEAD EMI 100MHZ       | 80R A      |
| 2422 | 202203100367 | ELCAP SK 16V S     | 47U PM20 B   | 3225 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 5004 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2423 | 223878615649 | CER2 0603 X7R 16V  | 100N PM10 R  | 3231 | 232270260102 | RST SM 0603 RC21         | 1K PM5 R   | 5005 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2424 | 202203100367 | ELCAP SK 16V S     | 47U PM20 B   | 3232 | 232270260273 | RST SM 0603 RC21         | 27K PM5 R  | 5101 | 242253595853 | IND FXD SM 0603 0U10          | PM10 R     |
| 2427 | 202203100367 | ELCAP SK 16V S     | 47U PM20 B   | 3233 | 232270260102 | RST SM 0603 RC21         | 1K PM5 R   | 5102 | 242253595853 | IND FXD SM 0603 0U10          | PM10 R     |
| 2451 | 222224119876 | CER2 1206 Y5V 10V  | 10U P8020 R  | 3234 | 232270260273 | RST SM 0603 RC21         | 27K PM5 R  | 5151 | 242253600782 | IND FXD TSL0808 S 33U         | PM10 B     |
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| 2551 | 202203100365 | ELCAP SK 50V S     | 1U PM20 B    | 3251 | 232270260279 | RST SM 0603 RC21         | 27R PM5 R  | 5153 | 242254900126 | IND FXD 0805 EMI 100MHZ       | 120R R     |
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| 2634 | 223886715279 | CER1 0603 NP0 50V  | 27P PM5 R    | 3253 | 232270461002 | RST SM 0603 RC22H        | 1K PM1 R   | 5155 | 242253600782 | IND FXD TSL0808 S 33U         | PM10 B     |
| 2635 | 223886715279 | CER1 0603 NP0 50V  | 27P PM5 R    | 3254 | 232270260273 | RST SM 0603 RC21         | 27K PM5 R  | 5156 | 242253600782 | IND FXD TSL0808 S 33U         | PM10 B     |
| 2636 | 223878615649 | CER2 0603 X7R 16V  | 100N PM10 R  | 3255 | 232270461002 | RST SM 0603 RC22H        | 1K PM1 R   | 5157 | 242254900126 | IND FXD 0805 EMI 100MHZ       | 120R R     |
| 2637 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3256 | 232270260273 | RST SM 0603 RC21         | 27K PM5 R  | 5158 | 242254900126 | IND FXD 0805 EMI 100MHZ       | 120R R     |
| 2638 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3257 | 232270260279 | RST SM 0603 RC21         | 27R PM5 R  | 5161 | 242254944194 | IND FXD 0805 EMI 100MHZ       | 200R R     |
| 2639 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3258 | 212211805639 | RST SM 0603 RC0603       | 47R PM5 R  | 5162 | 242253600428 | IND FXD TSL0808 S 10U         | PM10 B     |
| 2641 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3261 | 232270260279 | RST SM 0603 RC21         | 27R PM5 R  | 5201 | 242254942893 | IND FXD 0603 EMI 100MHZ       | 120R R     |
| 2642 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3262 | 212211805639 | RST SM 0603 RC0603       | 47R PM5 R  | 5202 | 242254942893 | IND FXD 0603 EMI 100MHZ       | 120R R     |
| 2644 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3264 | 212211805635 | RST SM 0603 RC0603       | 10R PM5 R  | 5203 | 242254942893 | IND FXD 0603 EMI 100MHZ       | 120R R     |
| 2646 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3265 | 212211805635 | RST SM 0603 RC0603       | 10R PM5 R  | 5204 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2647 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3266 | 212211805635 | RST SM 0603 RC0603       | 10R PM5 R  | 5253 | 242253595853 | IND FXD SM 0603 0U10          | PM10 R     |
| 2649 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3281 | 232270260102 | RST SM 0603 RC21         | 1K PM5 R   | 5254 | 242253595853 | IND FXD SM 0603 0U10          | PM10 R     |
| 2651 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3282 | 232270260273 | RST SM 0603 RC21         | 27K PM5 R  | 5301 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2652 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3283 | 232270260102 | RST SM 0603 RC21         | 1K PM5 R   | 5401 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2653 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3289 | 232270260273 | RST SM 0603 RC21         | 27K PM5 R  | 5402 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2654 | 223878616641 | CER2 0603 X7R 16V  | 22N PM10 R   | 3301 | 232270461005 | RST SM 0603 RC22H        | 1M PM1 R   | 5403 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2656 | 222224119876 | CER2 1206 Y5V 10V  | 10U P8020 R  | 3302 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5404 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 2657 | 202203100367 | ELCAP SK 16V S     | 47U PM20 B   | 3303 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5405 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
|      |              |                    |              | 3304 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5406 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 3001 | 232270260562 | RST SM 0603 RC21   | 5K6 PM5 R    | 3305 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5407 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 3002 | 232270260101 | RST SM 0603 RC21   | 100R PM5 R   | 3306 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5408 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 3003 | 212211805669 | RST SM 0603 RC0603 | 10K PM5 R    | 3307 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5551 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 3004 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3308 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5601 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 3005 | 232270260562 | RST SM 0603 RC21   | 5K6 PM5 R    | 3309 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5621 | 242254944197 | IND FXD 0805 EMI 100MHZ       | 220R R     |
| 3006 | 232270260101 | RST SM 0603 RC21   | 100R PM5 R   | 3311 | 232270260222 | RST SM 0603 RC21         | 2K2 PM5 R  | 5622 | 242254944527 | IND FXD 0603 EMI 100MHZ       | 600R R     |
| 3007 | 232270260472 | RST SM 0603 RC21   | 4K7 PM5 R    | 3312 | 232270260472 | RST SM 0603 RC21         | 4K7 PM5 R  | 5623 | 242254944527 | IND FXD 0603 EMI 100MHZ       | 600R R     |
| 3008 | 212211805669 | RST SM 0603 RC0603 | 10K PM5 R    | 3313 | 232270260472 | RST SM 0603 RC21         | 4K7 PM5 R  | 5624 | 242254944527 | IND FXD 0603 EMI 100MHZ       | 600R R     |
| 3009 | 232270260362 | RST SM 0603 RC21   | 3K6 PM5 R    | 3314 | 232270260223 | RST SM 0603 RC21         | 22K PM5 R  | 5625 | 242254944527 | IND FXD 0603 EMI 100MHZ       | 600R R     |
| 3011 | 232270260102 | RST SM 0603 RC21   | 1K PM5 R     | 3315 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 5626 | 242254944527 | IND FXD 0603 EMI 100MHZ       | 600R R     |
| 3012 | 232270260102 | RST SM 0603 RC21   | 1K PM5 R     | 3316 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  |      |              |                               |            |
| 3013 | 232270260101 | RST SM 0603 RC21   | 100R PM5 R   | 3317 | 232270260332 | RST SM 0603 RC21         | 3K3 PM5 R  | 6001 | 932221745685 | DIO REC SM SSA34 (VISH) R     |            |
| 3014 | 232270260472 | RST SM 0603 RC21   | 4K7 PM5 R    | 3327 | 232270461002 | RST SM 0603 RC22H        | 1K PM1 R   | 6002 | 932220347685 | DIO REG SM BZX84-B16 (VISH) R |            |
| 3015 | 212211805669 | RST SM 0603 RC0603 | 10K PM5 R    | 3329 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 6003 | 932221745685 | DIO REC SM SSA34 (VISH) R     |            |
| 3016 | 232270260332 | RST SM 0603 RC21   | 3K3 PM5 R    | 3331 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 6006 | 933913910115 | DIO SIG SM BAS32L (PHSE) R    |            |
| 3017 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3402 | 232270463901 | RST SM 0603 RC22H        | 390R PM1 R | 6101 | 933913910115 | DIO SIG SM BAS32L (PHSE) R    |            |
| 3018 | 232270260562 | RST SM 0603 RC21   | 5K6 PM5 R    | 3403 | 232270260471 | RST SM 0603 RC21         | 470R PM5 R | 6201 | 933913910115 | DIO SIG SM BAS32L (PHSE) R    |            |
| 3019 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3404 | 232270260471 | RST SM 0603 RC21         | 470R PM5 R | 6202 | 933913910115 | DIO SIG SM BAS32L (PHSE) R    |            |
| 3021 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3405 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R |      |              |                               |            |
| 3022 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3406 | 235003510101 | RST NETW SM ARV24 4X100R | PM5 R      | 7001 | 932219076668 | IC SM L5972D (ST00) R         |            |
| 3023 | 232270260102 | RST SM 0603 RC21   | 1K PM5 R     | 3407 | 235003510101 | RST NETW SM ARV24 4X100R | PM5 R      | 7002 | 932217438685 | TRA SIG SM BC847C (KECO) R    |            |
| 3027 | 232270260562 | RST SM 0603 RC21   | 5K6 PM5 R    | 3409 | 232270461002 | RST SM 0603 RC22H        | 1K PM1 R   | 7003 | 932217438685 | TRA SIG SM BC847C (KECO) R    |            |
| 3024 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3411 | 232270260101 | RST SM 0603 RC21         | 100R PM5 R | 7004 | 932219076668 | IC SM L5972D (ST00) R         |            |
| 3031 | 232270260223 | RST SM 0603 RC21   | 22K PM5 R    | 3412 | 235003510229 | RST NETW SM ARV24 4X 22R | PM5 R      | 7005 | 932217438685 | TRA SIG SM BC847C (KECO)      |            |

|  |              |                                 |  |              |                                |
|--|--------------|---------------------------------|--|--------------|--------------------------------|
| 7202   | 932216972682 | IC SM AT24C02N-10SC-2.7(ATME) L | 3019   | 232270260473 | RST SM 0603 RC21 47K PM5 R     |
| 7301   | 313815862181 | CPU ASSY (LPL -F1 15")          | 3022   | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 7301   | 823827716771 | NT68F632AL CPU                  | 3025   | 212211805651 | RST SM 0603 RC0603 390R PM5 R  |
| 7302   | 932217438685 | TRA SIG SM BC847C (KECO) R      | 3026   | 232270260241 | RST SM 0603 RC21 240R PM5 R    |
| 7303   | 932219183685 | IC SM LM809M3-2.93 NOPB(NSCO)R  | 3032   | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 7304   | 932222076668 | IC SM AME1117CCGTZ (ST00) R     | 3606   | 231291511808 | RST MFLM MBB0207 A 1R8 PM1 A   |
| 7305   | 313815862211 | EEPROM ASSY (LPL-F1 15")        | 5302   | 242254944197 | IND FXD 0805 EMI 100MHZ 220R R |
| 7305   | 932218650682 | IC AT24C16A-10PI-2.7 (ATME) L   | 5303   | 242254944197 | IND FXD 0805 EMI 100MHZ 220R R |
| 7401   | 932222013671 | IC SM MST51512L-LF (MSTA) Y     | 7007   | 932220212685 | IC SM LM217D2 (ST00) R         |
| 7402   | 932222075668 | IC SM AME1117BCGTZ (ST00) R     | 7301   | 313815862191 | CPU ASSY (AUO F1 15")          |
| 7403   | 932222076668 | IC SM AME1117CCGTZ (ST00) R     | 0291   | 313815566091 | LABEL-EEPROM-AUO               |
| 7404   | 932222076668 | IC SM AME1117CCGTZ (ST00) R     | 0615   | 313811708191 | HEX CODE OF F/W (NO MATL REQ)  |
| 7502   | 932216677682 | IC SM M12L16161A-7T (ESMT) L    | 7305   | 313815862221 | EEPROM ASSY (AUO-F1 15")       |
| 7501   | 932216677682 | IC SM M12L16161A-7T (ESMT) L    | 0292   | 313815566091 | LABEL-EEPROM-AUO               |
| 7621   | 935276561518 | IC SM SAA7119E/V2/G (PHSE) R    | 7621   | 935276561557 | IC SM SAA7119E/V2/G (PHSE) Y   |
| 7622   | 932222077668 | IC SM AME1117ECGTZ (ST00) R     | 1931   | 242202605741 | SOC CINCH V 3P F 1L3 GNBURD Y  |
| 7623   | 932222076668 | IC SM AME1117CCGTZ (ST00) R     | 2933   | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
|  |              |                                 | 2936   | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
|  |              |                                 | 2939   | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 1052   | 313815860801 | YPbPr-IN PCB ASSY               | 1180   | 313815862291 | MAIN FRAME+ WIRE ASSY          |
| 1931   | 823827716831 | 1 X 3 OIN JACK VERTICAL TYPE    | 8161   | 313819874542 | CBLE -266 6/290/6-266 AWG28    |
| 8931   | 313819874521 | CBLE -015 5/70/5-915 AWG28      | 1183   | 823827717271 | DC-AC INVERTER(LIVP-2001 A)    |
| 5931   | 242253595588 | IND FXD SM 0805 0U56 PM10 R     | 1186   | 823827717661 | LSP BOX 8R 3W-L(P150BL)        |
| 5932   | 242253595588 | IND FXD SM 0805 0U56 PM10 R     |  |              |                                |
| 5933   | 242253595588 | IND FXD SM 0805 0U56 PM10 R     |  |              |                                |
| 5934   | 242253595588 | IND FXD SM 0805 0U56 PM10 R     |  |              |                                |
| 5935   | 242253595588 | IND FXD SM 0805 0U56 PM10 R     |  |              |                                |
| 5936   | 242253595588 | IND FXD SM 0805 0U56 PM10 R     |  |              |                                |
| 2931   | 223886715689 | CER1 0603 NP0 50V 68P PM5 R     |  |              |                                |
| 2932   | 223886715121 | CER1 0603 NP0 50V 120P PM5 R    |  |              |                                |
| 2933   | 223886715689 | CER1 0603 NP0 50V 68P PM5 R     |  |              |                                |
| 2934   | 223886715689 | CER1 0603 NP0 50V 68P PM5 R     |  |              |                                |
| 2935   | 223886715121 | CER1 0603 NP0 50V 120P PM5 R    |  |              |                                |
| 2936   | 223886715689 | CER1 0603 NP0 50V 68P PM5 R     |  |              |                                |
| 2937   | 223886715689 | CER1 0603 NP0 50V 68P PM5 R     |  |              |                                |
| 2938   | 223886715121 | CER1 0603 NP0 50V 120P PM5 R    |  |              |                                |
| 2939   | 223886715689 | CER1 0603 NP0 50V 68P PM5 R     |  |              |                                |
| 3931   | 232270260339 | RST SM 0603 RC21 33R PM5 R      |  |              |                                |
| 3932   | 212211805964 | RST SM 0603 RC0603 75R PM1 R    |  |              |                                |
| 3933   | 232270260339 | RST SM 0603 RC21 33R PM5 R      |  |              |                                |
| 3934   | 212211805964 | RST SM 0603 RC0603 75R PM1 R    |  |              |                                |
| 3935   | 232270260339 | RST SM 0603 RC21 33R PM5 R      |  |              |                                |
| 3936   | 212211805964 | RST SM 0603 RC0603 75R PM1 R    |  |              |                                |
|  |              |                                 |  |              |                                |
| 1053   | 313815860811 | IR PCB ASSY                     |  |              |                                |
| 1902   | 243812800224 | SWI PUSH 2P 0.2A 20V SFPC12 B   |  |              |                                |
| 2901   | 223878615649 | CER2 0603 X7R 16V 100N PM10 R   |  |              |                                |
| 2902   | 222278019763 | CER2 0805 Y5V 16V 1U PM20 R     |  |              |                                |
| 2903   | 223858015636 | CER2 0805 X7R 50V 10N PM10 R    |  |              |                                |
| 3901   | 212211805669 | RST SM 0603 RC0603 10K PM5 R    |  |              |                                |
| 3902   | 232270260101 | RST SM 0603 RC21 100R PM5 R     |  |              |                                |
| 3904   | 212211805647 | RST SM 0603 RC0603 220R PM5 R   |  |              |                                |
| 3905   | 212211805647 | RST SM 0603 RC0603 220R PM5 R   |  |              |                                |
| 7901   | 932217439685 | TRA SIG SM BC857C (KECO) R      |  |              |                                |
| 6901   | 313815862261 | IR + HOLDER ASSY                |  |              |                                |
| 6901   | 932220313667 | IR RECEIVER TSOP34136SB1 L      |  |              |                                |
| 6902   | 313815862171 | LED + HOLDER ASSY               |  |              |                                |
| 6902   | 932214603682 | LED VS L-3WYGW (KIEL) B         |  |              |                                |
|  |              |                                 |  |              |                                |
| 1054   | 313815860881 | KEY BOARD ASSY                  |  |              |                                |
| 1903   | 242212803035 | SWI TACT SM 1P 1POS SKQGAB R    |  |              |                                |
| 1904   | 242212803035 | SWI TACT SM 1P 1POS SKQGAB R    |  |              |                                |
| 1906   | 242212803035 | SWI TACT SM 1P 1POS SKQGAB R    |  |              |                                |
| 1907   | 242212803035 | SWI TACT SM 1P 1POS SKQGAB R    |  |              |                                |
| 1908   | 242212803035 | SWI TACT SM 1P 1POS SKQGAB R    |  |              |                                |
| 1921   | 823827716481 | CON BM H2P M1.25                |  |              |                                |
| 2904   | 223858615636 | CER2 0603 X7R 50V 10N PM10 R    |  |              |                                |
| 3906   | 232270260471 | RST SM 0603 RC21 470R PM5 R     |  |              |                                |
| 3907   | 232270260222 | RST SM 0603 RC21 2K2 PM5 R      |  |              |                                |
| 3909   | 232270260332 | RST SM 0603 RC21 3K3 PM5 R      |  |              |                                |
| 3910   | 232270260472 | RST SM 0603 RC21 4K7 PM5 R      |  |              |                                |
| 3911   | 232270260102 | RST SM 0603 RC21 1K PM5 R       |  |              |                                |
| Diversity of 150F1(AUO Panel) compared with 150F1(LPL Panel) |              |                                 | Diversity of 150F1(CPT Panel) compared with 150F1(LPL Panel) |              |                                |
| 1050   | 823827717471 | TFT-LCD MOD T150XG01 V.0(AUO0)  | 1050   | 823827717481 | TFT-LCD CLAA150XP03            |
| 1051   | 313815862131 | SCALER PCB ASSY (NAFT)15"AUO    | 1051   | 313815863201 | SCALER PCB ASSY(NAFT)15 CPT    |
| 2026   | 223878615647 | CER2 0603 X7R 16V 68N PM10 R    | 2026   | 223858619805 | CER2 0603 Y5V 50V 10N P8020 R  |
| 2163   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R  | 2315   | 223858615636 | CER2 0603 X7R 50V 10N PM10 R   |
| 2164   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R  | 3016   | 212211805976 | RST SM 0603 RC0603 3K PM5 R    |
| 2165   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R  | 3019   | 232270260473 | RST SM 0603 RC21 47K PM5 R     |
| 2166   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R  | 3022   | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 2167   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R  | 3023   | 232270260472 | RST SM 0603 RC21 4K7 PM5 R     |
| 2315   | 223858615636 | CER2 0603 X7R 50V 10N PM10 R    | 3025   | 212211805651 | RST SM 0603 RC0603 390R PM5 R  |
| 3016   | 212211805976 | RST SM 0603 RC0603 3K PM5 R     | 3026   | 232270260241 | RST SM 0603 RC21 240R PM5 R    |
|  |              |                                 | 3032   | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
|  |              |                                 | 3606   | 231291511808 | RST MFLM MBB0207 A 1R8 PM1 A   |
|  |              |                                 | 5302   | 242254944527 | IND FXD 0603 EMI 100MHZ 600R R |
|  |              |                                 | 5303   | 242254944527 | IND FXD 0603 EMI 100MHZ 600R R |
|  |              |                                 | 7007   | 932220212685 | IC SM LM217D2 (ST00) R         |
|  |              |                                 | 7301   | 313815863221 | CPU ASSY(CPT)                  |
|  |              |                                 | 0291   | 313815566611 | LABEL-CPT                      |
|  |              |                                 | 0615   | 313811708181 | HEX CODE OF F/W (NO MATL REQ)  |
|  |              |                                 | 7301   | 932222010682 | IC SM NT68F632ALG (NOVA) L     |
|  |              |                                 | 7305   | 313815863231 | EEPROM ASSY(CPT)               |
|  |              |                                 | 0292   | 313815566611 | LABEL-CPT                      |
|  |              |                                 | 7621   | 935276561557 | IC SM SAA7119E/V2/G (PHSE) Y   |
|  |              |                                 | 2163   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
|  |              |                                 | 2164   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
|  |              |                                 | 2165   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
|  |              |                                 | 2166   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
|  |              |                                 | 2167   | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
|  |              |                                 | 1931   | 242202605741 | SOC CINCH V 3P F 1L3 GNBURD Y  |
|  |              |                                 | 2933   | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
|  |              |                                 | 2936   | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
|  |              |                                 | 2939   | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
|  |              |                                 | 1180   | 313815862292 | MAIN FRAME+ WIRE ASSY          |
|  |              |                                 | 0051   | 313815136412 | MAIN FRAME(AUO)                |
|  |              |                                 | 8161   | 313819874542 | CBLE -266 6/290/6-266 AWG28    |
|  |              |                                 | 1185   | 313819875021 | LSP BOX 8R 3W - R (P150BR)     |
|  |              |                                 | 1186   | 313819875031 | LSP BOX 8R 3W - L (P150BL)     |
|  |              |                                 | 8174   | 313819875381 | CBLE -104 20/230/20-032 AWG28  |
|  |              |                                 | 0126   | 313815565871 | RATING LABEL                   |
|  |              |                                 | 0145   | 313815523432 | OWNER'S MANUAL                 |
|  |              |                                 | 0450   | 313815639352 | CARTON                         |
|  |              |                                 | 0453   | 313815640091 | P.E. BAG                       |

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| Diversity of 20MF605T/17 compared with 15MF605T/17(LPL) |              |                                |
|---|--------------|--------------------------------|
| Item  | 12NC         | Description                    |
|   | 863900016038 | 20MF605T/17                    |
| 0011  | 823827717611 | TFT-LCD MOD A201SN02 V2(AUO0)  |
| 0030  | 313815862141 | SCALER PCB ASSY (NAFT)20"AUO   |
| 0040  | 242254301372 | RES XTL SM 18M432 16P HC49/S R |
| 0041  | 242254301501 | RES XTL SM 11M059 20P HC49/S R |
| 0291  | 223886715108 | CER1 0603 NP0 50V 1P PM0P25 R  |
| 0292  | 223886715109 | CER1 0603 NP0 50V 10P PM5 R    |
| 0450  | 223858615623 | CER2 0603 X7R 50V 1N PM10 R    |
| 0451  | 223891619849 | CER2 0603 Y5V 25V 100N P8020 R |
| 0452  | 235003510479 | RST NETW SM ARV24 4X 47R PM5 R |
| 0453  | 235003510479 | RST NETW SM ARV24 4X 47R PM5 R |
| 0615  | 235003510479 | RST NETW SM ARV24 4X 47R PM5 R |
| 1050  | 235003510479 | RST NETW SM ARV24 4X 47R PM5 R |
| 1051  | 235003510479 | RST NETW SM ARV24 4X 47R PM5 R |
| 1101  | 235003510479 | RST NETW SM ARV24 4X 47R PM5 R |
| 1180  | 212211805639 | RST SM 0603 RC0603 47R PM5 R   |
| 1183  | 212211805635 | RST SM 0603 RC0603 10R PM5 R   |
| 1185  | 212211805639 | RST SM 0603 RC0603 47R PM5 R   |
| 1186  | 212211805639 | RST SM 0603 RC0603 47R PM5 R   |
| 1301  | 212211805631 | RST SM 0603 JUMP. MAX 0R05 R   |
| 1553  | 212211805631 | RST SM 0603 JUMP. MAX 0R05 R   |
| 2552  | 313815862231 | EEPROM ASSY (AUO-F1 20")       |
| 2553  | 313815565901 | LABEL-EEPROM-AUO               |
| 2554  | 932222015671 | IC SM MST51502L-LF (MSTA) Y    |
| 2556  | 935276561557 | IC SM SAA7119E/V2/G (PHSE) Y   |
| 3551  | 313819874691 | CBLE-268 8/180/8-268 AWG28     |
| 3552  | 313819874681 | CBLE-262 2/180/2-042 AWG28     |
| 3553  | 933967270685 | TRA SIG SM BC847CLG (ONSE) R   |
| 3554  | 933967270685 | TRA SIG SM BC847CLG (ONSE) R   |
| 3555  | 933967270685 | TRA SIG SM BC847CLG (ONSE) R   |
| 3556  | 933967270685 | TRA SIG SM BC847CLG (ONSE) R   |
| 3557  | 933967270685 | TRA SIG SM BC847CLG (ONSE) R   |
| 3558  | 932214526668 | IC SM M24C02-WMN6 (ST00) R     |
| 3561  | 313815862201 | CPU ASSY (F1-20")              |
| 3562  | 313815565901 | LABEL-EEPROM-AUO               |
| 4602  | 313811708241 | HEX CODE OF F/W (NO MATL REQ)  |
| 4623  | 933967270685 | TRA SIG SM BC847CLG (ONSE) R   |
| 5931  | 823827716381 | REGULATOR                      |
| 5932  | 242202518229 | CON H 50P F 0.50 SM FPC 0.3 R  |
| 5933  | 242253595313 | IND FXD SM 0805 0U56 PM10 R    |
| 5934  | 242253595313 | IND FXD SM 0805 0U56 PM10 R    |
| 5935  | 242253595313 | IND FXD SM 0805 0U56 PM10 R    |
| 5936  | 242253595313 | IND FXD SM 0805 0U56 PM10 R    |
| 7002  | 242253595313 | IND FXD SM 0805 0U56 PM10 R    |
| 7003  | 242253595313 | IND FXD SM 0805 0U56 PM10 R    |
| 7005  | 313815862161 | MAIN FRAME+WIRED ASSY(AUO)     |
| 7009  | 313819874661 | CBLE-016 6/360/6-016 AWG28     |
| 7011  | 823827717601 | DC-AC INVERTER (T501061.00)    |
| 7202  | 823827717451 | LSP BOX 8R 3W-R (P150CR)       |
| 7301  | 823827717651 | LSP BOX 8R 3W-L (P150CL)       |
| 7302  | 313819874641 | FFC 50/270/50 PITCH 0.5mm      |
| 7303  | 313815758321 | BEZEL ASSY                     |
| 7305  | 313815414951 | BEZEL                          |
| 7401  | 313815414961 | BACK COVER                     |
| 7621  | 313815414971 | DOOR-CABLE                     |
| 8161  | 313815639381 | CARTON                         |
| 8174  | 313815639371 | CUSHION-L                      |
| 8175  | 313815639361 | CUSHION-R                      |
| 8176  | 313815640141 | P.E. FOAM BAG(750 X 800)       |

| Diversity of 15MF500T/37(LPL Panel)compared with 15MF605T/17(LPL PANEL) |              |                                |
|---|--------------|--------------------------------|
| Item  | 12NC         | Description                    |
|   | 863900016222 | 15MF500T/37                    |
| 0007  | 313815759711 | BASE ASSY                      |
| 0145  | 313815523432 | OWNER'S MANUAL                 |
| 0450  | 313815640311 | CARTON                         |
| 0453  | 313815640091 | P.E. BAG                       |
| 1185  | 313819875021 | LSP BOX 8R 3W - R (P150BR)     |
| 1186  | 313819875031 | LSP BOX 8R 3W - L (P150BL)     |
| 1931  | 242202605741 | SOC CINCH V 3P F 1L3 GNBURD Y  |
| 2026  | 223858619805 | CER2 0603 Y5V 50V 10N P8020 R  |
| 2163  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2164  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2165  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2166  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2167  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2315  | 223858615636 | CER2 0603 X7R 50V 10N PM10 R   |
| 2933  | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 2936  | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 2939  | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 3019  | 232270260473 | RST SM 0603 RC21 47K PM5 R     |
| 3022  | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 3032  | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 5302  | 242254944197 | IND FXD 0805 EMI 100MHZ 220R R |
| 5303  | 242254944197 | IND FXD 0805 EMI 100MHZ 220R R |
| 7621  | 935276561557 | IC SM SAA7119E/V2/G (PHSE) Y   |
| 8161  | 313819874542 | CBLE -266 6/290/6-266 AWG28    |

| Diversity of 15MF500T/37(CPT Panel)compared with 15MF605T/17(LPL PANEL) |              |                                |
|---|--------------|--------------------------------|
| Item  | 12NC         | Description                    |
|   | 863900016222 | 15MF500T/37                    |
| 0007  | 313815759711 | BASE ASSY                      |
| 0051  | 313815136412 | MAIN FRAME(AUO)                |
| 0126  | 313815566871 | RATING LABEL                   |
| 0145  | 313815523581 | D.F.U.                         |
| 0291  | 313815566611 | LABEL-CPT                      |
| 0292  | 313815566611 | LABEL-CPT                      |
| 0450  | 313815640312 | CARTON                         |
| 0453  | 313815640091 | P.E. BAG                       |
| 0458  | 313815636362 | P.E.BAG 275x320 mm             |
| 0615  | 313811708181 | HEX CODE OF F/W (NO MATL REQ)  |
| 1050  | 823827717481 | TFT-LCD CLAA150XP03            |
| 1051  | 313815863201 | SCALER PCB ASSY(NAFT)15 CPT    |
| 1180  | 313815862292 | MAIN FRAME+ WIRE ASSY          |
| 1185  | 313819875021 | LSP BOX 8R 3W - R (P150BR)     |
| 1186  | 313819875031 | LSP BOX 8R 3W - L (P150BL)     |
| 1931  | 242202605741 | SOC CINCH V 3P F 1L3 GNBURD Y  |
| 2026  | 223858619805 | CER2 0603 Y5V 50V 10N P8020 R  |
| 2163  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2164  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2165  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2166  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2167  | 223824619858 | CER2 0603 Y5V 10V 470N P8020 R |
| 2315  | 223858615636 | CER2 0603 X7R 50V 10N PM10 R   |
| 2933  | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 2936  | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 2939  | 223886715229 | CER1 0603 NP0 50V 22P PM5 R    |
| 3016  | 212211805976 | RST SM 0603 RC0603 3K PM5 R    |
| 3019  | 232270260473 | RST SM 0603 RC21 47K PM5 R     |
| 3022  | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 3023  | 232270260472 | RST SM 0603 RC21 4K7 PM5 R     |
| 3025  | 212211805651 | RST SM 0603 RC0603 390R PM5 R  |
| 3026  | 232270260241 | RST SM 0603 RC21 240R PM5 R    |
| 3032  | 212211805669 | RST SM 0603 RC0603 10K PM5 R   |
| 3606  | 231291511808 | RST MFLM MBB0207 A 1R8 PM1 A   |
| 5302  | 242254944527 | IND FXD 0603 EMI 100MHZ 600R R |
| 5303  | 242254944527 | IND FXD 0603 EMI 100MHZ 600R R |
| 7007  | 932220212685 | IC SM LM217D2 (ST00) R         |
| 7301  | 313815863221 | CPU ASSY(CPT)                  |
| 7301  | 932222010682 | IC SM NT68F632ALG (NOVA) L     |
| 7305  | 313815863231 | EEPROM ASSY(CPT)               |
| 7621  | 935276561557 | IC SM SAA7119E/V2/G (PHSE) Y   |
| 8161  | 313819874542 | CBLE -266 6/290/6-266 AWG28    |
| 8174  | 313819875381 | CBLE -104 20/230/20-032 AWG28  |

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering.

Do not handle SMDs with bare hands.

- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.

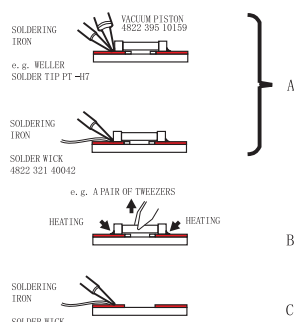
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron.

They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).

- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

1.3 Caution on removal

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should

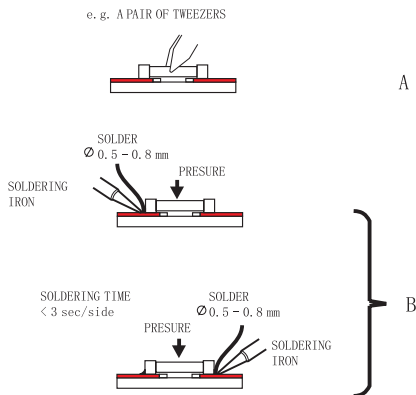
preferably be equipped with a thermal control (soldering temperature: 225 to 250 C).

- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

Fig. 2 MOUNTING



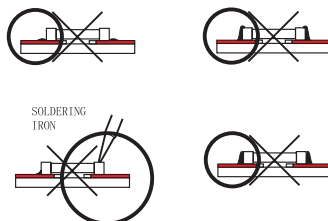
2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.

- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).



Fig.3 Examples





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### 3. Lead-free product identification

You can identify lead-free product by Philips-lead-free logo on PCB.



### 4. Lead-free product repair instruction

4.1 Use only lead-free Solder Alloy 0622 149 00106(1.2mm SAC305) or 0622 149 00108(1.0mm SAC305).

Remark: For lead free soldering material, please visit [www.alphametals.com](http://www.alphametals.com) website for details. This is recommended by Philips.

4.2 Use only adequate solder tools applicable for lead-free soldering-tin. The solder tool must be able to reach at least a solder-temperature of 400°C, to stabilize the adjusted temperature at the solder-tip and to exchange solder-tips for different applications.

Small Passives/Actives to be removed with thermal tweezers

Automated system for IC and BGA repair (Microscope, Camera, Beam split optics, Computer, Programmer, Heat controllers, Vacuum system, Laser pointer)

Solder Hand-Tool (Adjustable in temperature height, Temperature shall be held constant, Flexible tips)

4.3 Adjust your solder tool so that a temperature around 360°C-380°C is reached and stabilized at the solder joint.

Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed.

Corrosion of Tool-Spikes can be avoided when using SAC305 and a temperature of less than 400°C.

4.4 Mix of lead-free solder-tin/parts with leaded soldering-tin/parts is possible but not recommended. If not to avoid clean carefully the solder-joint from old tin and re-solder with new tin.

4.5 Use only original spare-parts listed in the Service-Manuals. Standard-material (consumables) can also be purchased at external companies.

4.6 Special information for lead-free BGA-ICs: this ICs will be delivered in so-called dry-packaging to protect the IC against moisture and with lead-free logo on it. This packaging may only be opened shortly before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-)pressure. If the packaging was opened before usage the IC has to be heated up for some hours (around 90°C) for drying (Take attention for ESD-protection!)

### 5. Rework on BGA (Ball Grid Array) ICs

#### General

Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

#### Device Removal

As is the case with any component that, it is essential when removing an (LF)BGA, the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB.

To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

#### Area Preparation

When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA.

Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent. After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA

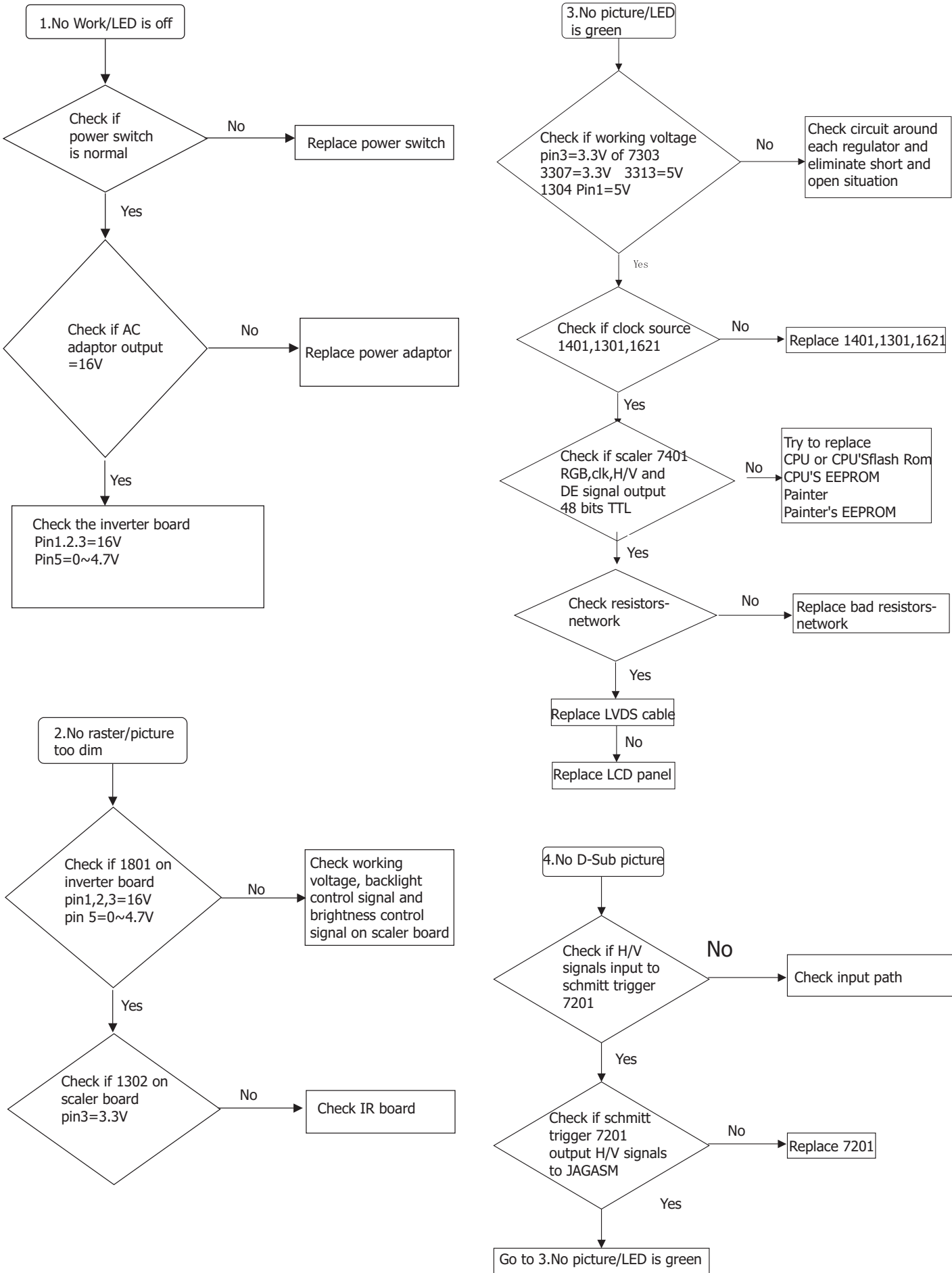
Note: Do not apply solder paste, as this has shown to result in problems during re-soldering.

#### Device Replacement

The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. To reflow the solder, apply a temperature profile according to the IC data sheet. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

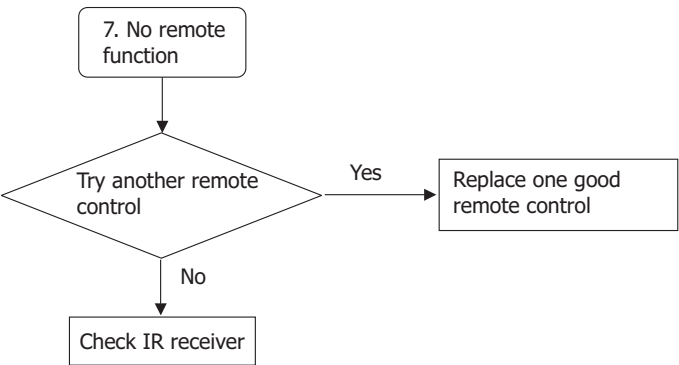
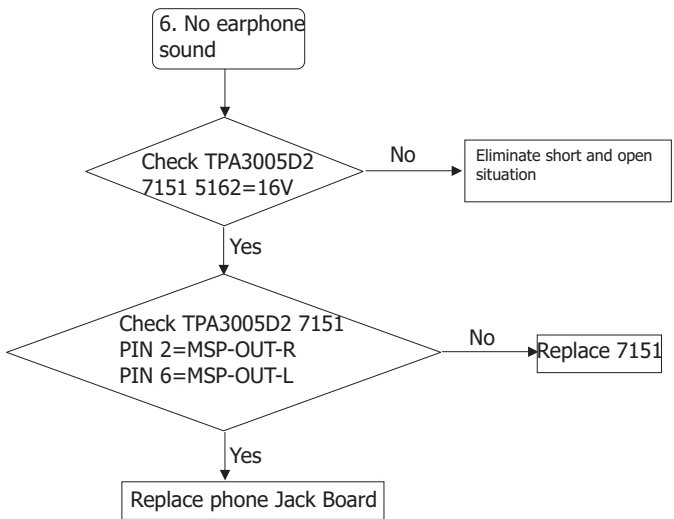
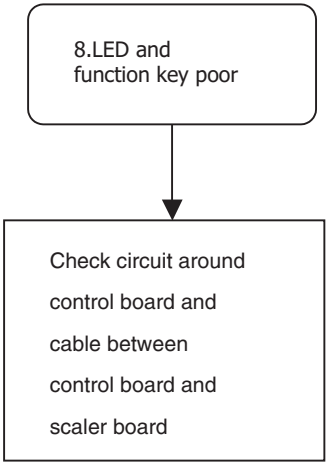
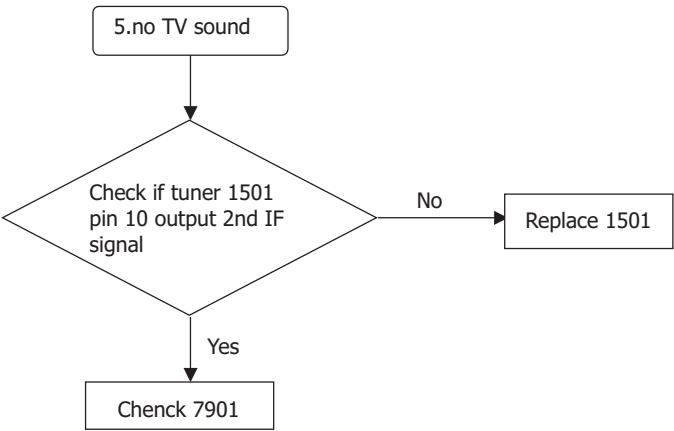
#### More Information

For more information on how to handle BGA devices, visit this URL: <http://www.atyourservice.ce.philips.com> (needs subscription). After login, select " Magazine ", then go to " Workshop Information ". Here you will find Information on how to deal with BGA-ICs.





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## GENERAL PRODUCT SPECIFICATION

- . 20" Multifunction LCD monitor.
- . PC 15 pins D-SUB analog interface.
- . PC audio line in with mini-Jack
- . TV Tuner, S-Video, RCA AV input interface with R/L Audio-in.
- . RCA connectors for YPbPr input
- . NTSC, PAL TV system.
- . PC graphic auto picture adjustment
- . 14 user modes
- . User friendly OSD menu
- . User friendly remote controller
- . DDC2B communication capability
- . MAX. resolution 800 x 600 non-interlace at 60 Hz
- . SVGA 20" color TFT LCD flat panel
- . Easy tilt base
- . Anti-glare to reduce light reflection
- . Power management capability

|   |          |                           |            |                |    |
|---|----------|---------------------------|------------|----------------|----|
| CLASS NO.   |          | 20" F1 TFT LCD Monitor/TV |            | 8639 000 16038 |    |
|   |          | TYPE :20MF605T/17         |            |                |    |
|   |          | BRAND : Magnavox          |            |                |    |
| 2004-12-15  |          |                           |            |                |    |
| NAME  | ISON KUO | SUPERS.                   | 23         | 590            | 1  |
| TY  | CHECK    | DATE                      | 2004-12-15 | 10             | A4 |
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CLASS NO.

20" F1 TFT LCD Monitor/TV  
 TYPE :20MF605T/17  
 BRAND : Magnavox

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|            |          |                           |                 |   |   |    |    |
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| CLASS NO.  |          | 20" F1 TFT LCD Monitor/TV |                 | 8639 000 16038  |   |    |    |
|            |          | TYPE :20MF605T/17         |                 |   |   |    |    |
|            |          | BRAND : Magnavox          |                 |   |   |    |    |
| 2004-12-15 |          |                           |                 |   |   |    |    |
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## 1.0 FOREWORD

This specification describes a 20" multifunction LCD Monitor, maximum resolution up to 800x600/60Hz non-interlaced.

## 2.0 PRODUCT PROFILE

Philips 20" multifunction LCD Monitor can connect to PC's analog D-SUB connector, and also support TV, S-Video, YPbPr/HD, and AV interface.

Meet world wide major TV system: NAFTA

## 2.1 LCD Panel:

|                                 |  |
|---------------------------------|--|
| Type NR.                        | : A201SN02 (AUO)                       |
| Display area(mm)                | : 408(H) x 306(V) (20.1-inch diagonal) |
| Display mode                    | : TN type, Normal white + SWV film     |
| Number of Pixels                | : 800(H) x 600(V)                      |
| Pitch (mm)                      | : 0.51(H) x 0.51(V)                    |
| Color pixel arrangement         | : RGB vertical stripes                 |
| Display mode                    | : normally white TN                    |
| Number of color                 | : 16.7M (8 bits)                       |
| Brightness (cd/m <sup>2</sup> ) | : 450nit(typ.)                         |
| Viewing angle                   | : -80° ~ 80°(H), -60° ~ 60°(V)(Typ.)   |
| Response time                   | : 16ms typ. (Tr+Tf)                    |
| Surface treatment               | : Hard Coating + AR                    |
| Electrical interface            | : TTL (1 port)                         |
| Total module power(W)           | : 35W(typ.)                            |
| Contrast ratio                  | : Typical 500 : 1                      |
| Overall dimension (mm)          | : 448(W) x 347(H) x 23(D)(max.)        |
| Module weight (g)               | : 3500                                 |
| Backlight                       | : 6 CCFL                               |

\*\* Income inspection, please refer to panel specification.\*\*

2.2 Scanning frequencies : Hor. : 30 - 40KHz Ver.: 56 - 62 Hz

2.3 Video dot rate : <41 MHz

2.4 Power input : 90 - 264 Vac, 50/60 ± 2 Hz for AC/DC adapter (16V DC/ 3.75A)

2.5 Power consumption : typ 55 W

2.6 Unit Dimensions : mm W x mm H x mm D (Incl. Pedestal)

2.7 Unit Weight : 3.5 Kg

2.8 Chin speaker : 2 x 3 W

CLASS NO.

20" F1 TFT LCD Monitor/TV  
TYPE : 20MF605T/17  
BRAND : Magnavox

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## 2.9 Functions :

PC 15 pins D-sub analog interface with audio mini jack input (PC line in).  
TV Tuner, S-Video ,RCA AV with L/R Audio-in and YPbPr with audio.

2.10 Ambient temperature: 0 - 35 °C

## 2.11 Regulatory compliance :

Safety : CUL and / or CSA , NOM

UL 60950 and UL 60065 and / or CSA C22.2 NO. 950 , 065

EMI : FCC

FCC part 15 Class B

## 3.0 Electrical characteristics

## 3.1 Interface signals cables

VGA Interface Cable (option)  
Length : 1.8 M +/- 50 mm

Stereo RCA R/L audio cable (option)  
Length : 1.5 M +/- 50 mm

S-video cable (option)  
Length : 1.5 M +/- 50 mm

AV cable (option)  
Length : 1.5M +/- 50 mm

Mini Jack stereo cable (option)  
Length : 1.5 M +/- 50 mm

Ypbpr cable (option)  
Length : 1.5M +/- 50mm

CLASS NO.

20" F1 TFT LCD Monitor/TV

TYPE :20MF605T/17

BRAND : Magnavox

8639 000 16038

2004-12-15

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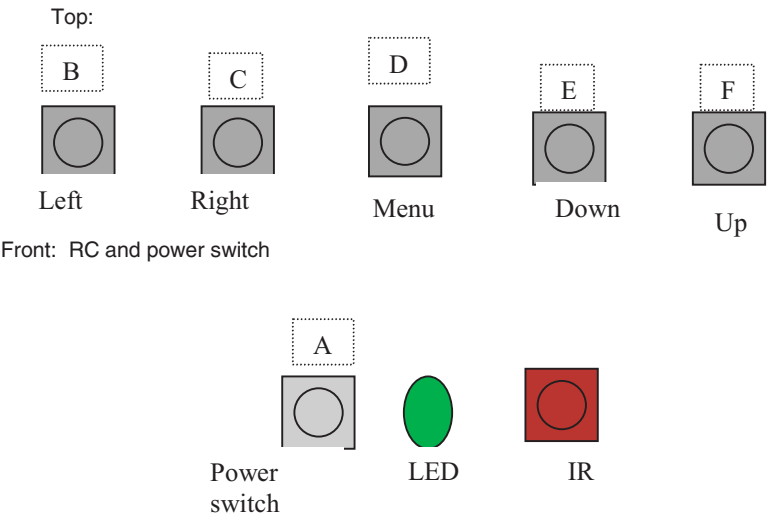
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3.2    User interface  
On screen display user control via keypad and remote control for PC, and TV OSD.  
3.2.1 Keypad definition



3.2.2 Key Function definition:

| Key | Function          | VGA mode         | TV/video mode     |
|-----|-------------------|------------------|-------------------|
| <A> | Power             | Soft Power       | Soft Power        |
| <B> | Left              | Left/Volume down | Left/Volume down  |
| <C> | Right             | Right/Volume up  | Right/Volume up   |
| <D> | Menu              | Call OSD menu    | Call OSD menu     |
| <E> | Down/channel down | Down             | Down/Channel Down |
| <F> | Up/Channel up     | Up               | Up/Channel up     |

PC mode Auto adjustment hot key: Press <B> and <C> at the same time and hold for 1 seconds.



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|   |          |                           |            |                |    |
|---|----------|---------------------------|------------|----------------|----|
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|   |          | TYPE :20MF605T/17         |            | 8639 000 16038 |    |
|   |          | BRAND :Magnavox           |            |                |    |
| 2004-12-15  |          |                           |            |                |    |
| NAME  | ISON KUO | SUPERS.                   | 23         | 590            | 6  |
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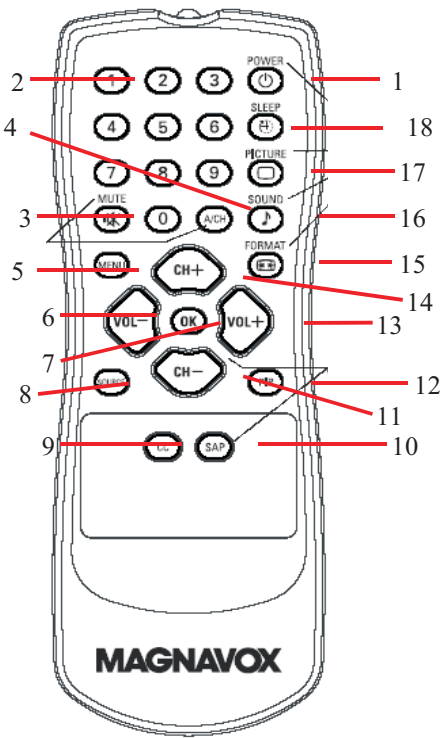
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- 1. Press "MENU" key to call main menu
- 2. By "Up/Down" to select function and Left/Right to adjust.
- 3. "Left/Right" also is Volume Hot Key (TV and PC mode)
- 4. "Up/Down" also is Channel Hot Key (TV mode)
- 5. Press hot Key <B> and <C> can auto-adjust picture position, phase and clock in PC mode.
- 6. Source key is for switching input signal from PC/TV/AV/S-Video/HD.

Power LED:  
Normal working: Green  
Power saving: Amber.

3.2.1 Remote control



- 1. Power : Power On/Standby
- 2. Numerica keys : (0~9) ,Channel setting
- 3. Mute : Sound mute function
- 4. Prev-CH : Recall previous CH
- 5. Menu : Main menu select and OK key
- 6. VOL- : Left/Volume Down
- 7. OK : OK
- 8. Source : Source select for PC, Tuner, CVBS, S-video, I
- 9. Closed cap. : Closed caption on/off
- 10. SAP(2nd audio) : Sound select
- 11. CH- : Down/Channel Down
- 12. PIP : PIP size select (Small/Medium/Large/PBP)
- 13. VOL+ : Right/Volume Up
- 14. CH+ : Up/ Channel Up
- 15. Display Format : Select display format (4:3, Expand 4:3, Compress 16:9)
- 16. Smart Sound : Select sound effect (Personal/News/Music/Theatre)
- 17. Smart Picture : Select picture effect (Personal/Movie/Sports/weak signal/multimedia/Night)
- 18. Sleep Timer : Sleep timer 15,30,60,120,180,240 OFF

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All PC or TV OSD menu function could be accomplished by remote control.

|            |          |                           |            |   |         |
|------------|----------|---------------------------|------------|---|---------|
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|            |          | BRAND : Magnavox          |            |   |         |
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## 3.3 PC and TV requirement

## 3.3.1 PC interface

## 3.3.1.1 Mode storing capacity

Pre-load : 8

User modes : 14

## 3.3.1.2 Horizontal scanning

Sync polarity : Positive or Negative

Scanning frequency : 30 - 40 KHz

## 3.3.1.3 Vertical scanning

Sync polarity : Positive or Negative

Scanning frequency : 56 - 62 Hz

## 3.3.1.4 Input connectors

(1) Input analog D-sub connector pin assignment:

| PIN No. | SIGNAL b(PC)         |
|---------|----------------------|
| 1       | Red                  |
| 2       | Green                |
| 3       | Blue                 |
| 4       | GND                  |
| 5       | GND                  |
| 6       | Red GND              |
| 7       | Green GND            |
| 8       | Blue GND             |
| 9       | +5V (Supply from PC) |
| 10      | Sync GND             |
| 11      | GND                  |
| 12      | Bi-directional data  |
| 13      | H-sync               |
| 14      | V-sync               |
| 15      | Data clock           |



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## 3.3.1.5 Available timings

Factory pre-load timing, size and centering are according to the reference timing charts. List as below

Mode 3, 6, 7 are preset modes that should pass QA inspection.

Mode 1, 2, 4, 5, 8 will run auto adjustment only, and W/O QA checking.

| MODE NO.       | 1                | * 2              | * 3                 |
|----------------|------------------|------------------|---------------------|
| RESOLUTION     | 640 x 350        | 720 x 400        | 640 x 480           |
| Dot clock(MHz) | 25.175           | 28.321           | 25.175              |
| f h            | 31.469kHz        | 31.469kHz        | 31.469kHz           |
| A ( us )       | 31.78(800 dots)  | 31.78(900dots)   | 31.778 (800 dots)   |
| B ( us )       | 3.813(96 dots)   | 3.813(108dots)   | 3.813 ( 96 dots)    |
| C ( us )       | 1.907(48 dots)   | 1.907(54dots)    | 1.907 ( 48 dots)    |
| D ( us )       | 25.42(640 dots)  | 25.42(720dots)   | 25.422 (640 dots)   |
| E ( us )       | 0.636(16 dots)   | 0.636(18dots)    | 0.636 ( 16 dots)    |
| f v            | 70Hz(70.09)      | 70Hz(70.087)     | 60Hz ( 59.940 )     |
| O (ms )        | 14.27(449 lines) | 14.27(449 lines) | 16.683 (525 lines ) |
| P ( ms )       | 0.064(2 lines)   | 0.064(2 lines)   | 0.064 ( 2 lines )   |
| Q (ms )        | 1.875(59 lines)  | 1.080(34 lines)  | 1.049 ( 33 lines )  |
| R ( ms )       | 11.12(350 lines) | 12.71(400 lines) | 15.253 (480 lines ) |
| S ( ms )       | 1.208(38 lines)  | 0.413(13 lines)  | 0.317 ( 10 lines)   |
| SYNC. H/V      | +/-              | -/+              | - / -               |
| POLARITY       |                  |                  |                     |
| SEP . SYNC     | Y                | Y                | Y                   |

| MODE NO.       | 4                  | 5                  |
|----------------|--------------------|--------------------|
| RESOLUTION     | 640x480            | 640 x 480          |
| Dot clock(MHz) | 30.240             | 31.500             |
| f h            | 35.0kHz            | 37.500kHz          |
| A ( us )       | 28.571(864 dots)   | 26.667 (840 dots)  |
| B ( us )       | 2.116( 64 dots)    | 2.032 ( 64 dots)   |
| C ( us )       | 3.175( 96 dots)    | 3.810 ( 120 dots)  |
| D ( us )       | 21.164(640 dots)   | 20.317 ( 640 dots) |
| E ( us )       | 2.116( 64 dots)    | 0.508 ( 16 dots)   |
| f v            | 66.7 HZ( 66.667 )  | 75Hz (75 )         |
| O (ms )        | 15.000(525 lines ) | 13.333 (500 lines) |
| P ( ms )       | 0.086( 3 lines )   | 0.080 ( 3 lines)   |
| Q (ms )        | 1.114( 39 lines )  | 0.427 ( 16 lines)  |
| R ( ms )       | 13.714(480 lines ) | 12.80 (480 lines)  |
| S ( ms )       | 0.086( 3 lines )   | 0.027 ( 1 line )   |
| SYNC. H/V      | +/+                | - / -              |
| POLARITY       | Or +/-             |                    |
| SEP . SYNC     | Y                  | Y                  |

A : H-Total  
B : H- Sync width  
C : H- Back porch  
D : H- Video width

O : V-Total  
P : V- Sync width  
Q : V- Back porch  
R : V- Video length

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E : H- Front porch

S : V- Front porch

| MODE NO.       | 6                 | 7                 | 8                  |
|----------------|-------------------|-------------------|--------------------|
| RESOLUTION     | 800 x 600         | 800 x 600         | 800 x 600          |
| Dot clock(MHz) | 36.000            | 40.000            | 49.500             |
| f h            | 35.156kHz         | 37.879kHz         | 46.875kHz          |
| A ( us )       | 28.44 (1024 dots) | 26.40 (1056 dots) | 21.333 (1056dots)  |
| B ( us )       | 2.000 ( 72 dots)  | 3.200 ( 128 dots) | 1.616 ( 80 dots)   |
| C ( us )       | 3.556 ( 128 dots) | 2.200 ( 88 dots)  | 3.232 ( 160 dots)  |
| D ( us )       | 22.22 ( 800 dots) | 20.00 ( 800 dots) | 16.162 ( 800 dots) |
| E ( us )       | 0.667 ( 24 dots)  | 1.000 ( 40 dots)  | 0.323 ( 16 dots)   |
| f v            | 56Hz (56.25 )     | 60Hz ( 60.316)    | 75Hz ( 75.000)     |
| O (ms )        | 17.78 (625 lines) | 16.58 (628 lines) | 13.333 (625lines)  |
| P ( ms )       | 0.057 ( 2 lines)  | 0.106 ( 4 lines)  | 0.064 ( 3 lines)   |
| Q (ms )        | 0.626 ( 22 lines) | 0.607 ( 23 lines) | 0.448 ( 21 lines)  |
| R ( ms )       | 17.07 (600 lines) | 15.84 (600 lines) | 12.80 (600lines)   |
| S ( ms )       | 0.028 ( 1 line )  | 0.026 ( 1 line )  | 0.021 ( 1 line )   |
| SYNC. H/V      | + / +             | + / +             | + / +              |
| POLARITY       |                   |                   |                    |
| SEP . SYNC     | Y                 | Y                 | Y                  |

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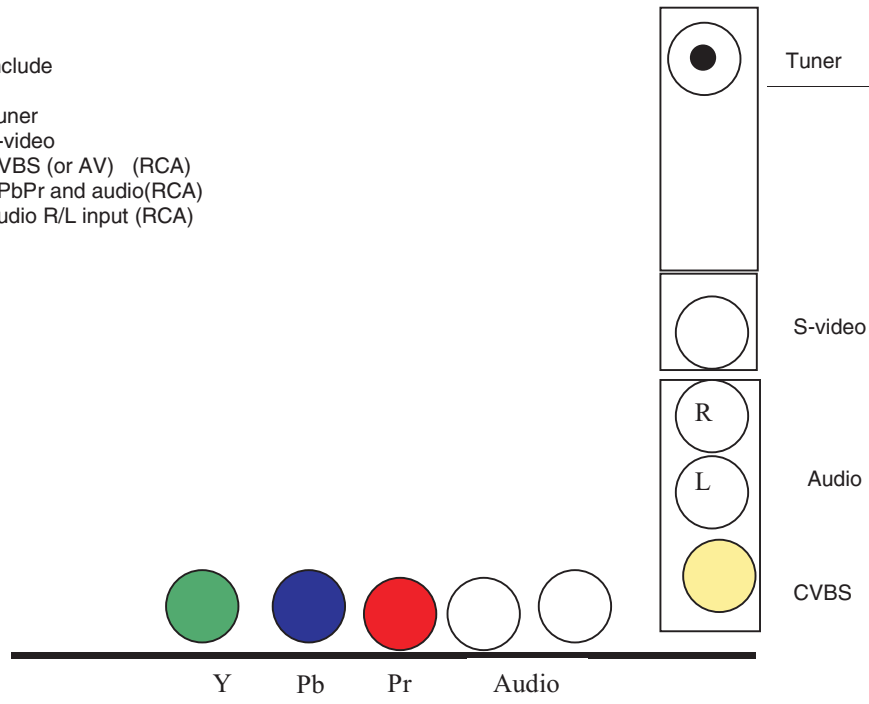


## 3.3.2 TV interface:

F1-20 TV function include

1. Tuner
2. S-video
3. CVBS (or AV) (RCA)
4. YPbPr and audio(RCA)
5. Audio R/L input (RCA)

Location:



Following table is the deviation of main TV system.

| Item                   | W EUROPE                                 | America                                 | AP                                     | China                                    |
|------------------------|--|---|--|--|
| TV Color system        | PAL, SECAM                               | NTSC                                    | PAL/NTSC,                              | PAL                                      |
| TV system              | B/G, D/K, I, L                           | M                                       | B/G, NTSC-M                            | D/K                                      |
| Tuner                  | FQ1216ME/I<br>Picture carrier<br>38.9MHz | FQ1236/F<br>Picture carrier<br>45.75MHz | FQ1216PN<br>Picture carrier<br>38.9MHz | FQ1256/I H-3<br>Picture carrier<br>38MHz |
| Sound decoder          | MSP3415G                                 | MSP3445G                                | MSP3415G                               | MSP3415G                                 |
| CVBS, YC               | Multi                                    | Multi                                   | Multi                                  | Multi                                    |
| Color system           |  |   |  |  |
| Scaler MCU             | WE version                               | NAFTA version                           | AP version                             | China version                            |
| Closed caption         | N  | Y                                       | N                                      | N  |
| V-chip                 | N  | Y                                       | N                                      | N  |
| Teletext               | N  | N                                       | N                                      | N  |
| Remote controller(RC5) | NAFTA version                            | NAFTA version                           | NAFTA version                          | NAFTA version                            |
| Channel number         | 100                                      | US Air 68, cable 125                    | 100                                    | 100                                      |

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Following table is the detail TV System list.

| TV system | Position of sound carrier (MHz) | Sound system             | Color system | Country  |
|-----------|---------------------------------|--------------------------|--------------|--|
| M         | 4.5/4.724212                    | FM-Stereo(A2)            | NTSC         | Korea  |
|           | 4.5                             | FM-FM(EIA-J)             | NTSC         | Japan  |
|           | 4.5                             | BTSC-stereo+SAP          | NTSC         | USA  |
| N         | 4.5                             | BTSC-stereo+SAP          | PAL          | Argentina  |
| B/G       | 5.5/5.7421875                   | FM-stereo(A2)            | PAL          | Germany, Austria, Switzerland, Italy, Netherlands, |
|           | 5.5/5.85                        | FM-Mono/NICAM            | PAL          | Belgium, Spain, Denmark, Finland, Norway, Sweden.  |
| L         | 6.5/5.85                        | AM-Mono/NICAM            | SECAM-L      | France   |
| I         | 6.0/6.552                       | FM-Mono/NICAM            | PAL          | Great Britain, Hong Kong, Ireland                  |
| D/K       | 6.5/6.2578125                   | FM-Stereo (A2,D/K1)      | SECAM-East   | Slovak. Rep.                                       |
|           | 6.5/6.7421875                   | FM-Stereo (A2,D/K2)      | PAL          | None   |
|           | 6.5/5.7421875                   | FM-Stereo (A2,D/K3)      | SECAM-East   | Poland   |
|           | 6.5/5.85                        | FM-Mono/NICAM(D/K,NICAM) | PAL          | China, Hungary                                     |

### 3.3.2.1 TV special setting:

Close Caption, V-chip (NAFTA Tuner ,CVBS input source only)

- CC-1 .. CC-4 decoding and display
- TXT1..TXT4 Text mode
- No Extended Data Services (EDS)
- support violence rating and checking
- Automatic CC-1 selection at user mute

### 3.3.3 Electric characteristics of I/O

D-sub 15 pins:

PC mode.

- Impedance: 75ohm.
- Level: 700mV
- Sync: TTL level, separate sync, + or - polarity.

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## PC-stereo input (For PC)

- Audio: Impedance > 10 k.

Input Level: 500 mVrms (Speaker output 3W when Input level > 630mVrms and Volume control at 100%)

## RCA A/V, and audio R+L input

- Location: Rear side
- CVBS: 75 $\Omega$  impedance.  
DC coupled signals 1Vpp  
(Sync:300mV, video:700mV)
- Audio: Impedance > 10 k.

Input Level: 500 mVrms (Speaker output 3W when Input level > 630mVrms and Volume control at 100%)

- ESD-protected : 15 kV

## HEADPHONE

- Location : On scaler board.
- Peripherals : Headphones with impedance between 8 - 600 ohm
- Features :When headphone plug is connected, loudspeaker sound is muted.
- Volume control: with the loudspeaker volume.
- Connector type : 3.5 mm stereo Jack, with switch
- Specifications : - Output: 32ohm>10 mW

- Sound is the same as from the loudspeakers.
- ESD-protected : 15 kV

## YPbPr:

- Location : Rear side
- Connector type: RCA Jack
- Input : 75ohm.

## S-video:

- Location : Rear side
- Input : 75ohm.

## 3.2 Power input connection

AC/DC adapter: +16V DC/ 3.75A (AC input 100~240V)

Power cord length : 1.8 M

Power cord type : 3 leads power cord with protective earth plug.

|   |          |                           |            |                |    |
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|   |          | BRAND : Magnavox          |            |                |    |
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## 3.5 Power management

PC mode

The power consumption and the status indication of the set with power management function are as follows,

| STATUS           | Horizontal | Vertical | Power Spec         |                    | LED   |
|------------------|------------|----------|--------------------|--------------------|-------|
|                  |            |          | 120V <sub>AC</sub> | 230V <sub>AC</sub> |       |
| On               | Pulse      | Pulse    | Typical            | 55 W               | Green |
| Sleep            | No Pulse   | No Pulse | < 1 W              | < 1 W              | Amber |
| Power switch off | -          | -        | < 1 W              | < 1 W              | -     |

TV mode

The power consumption and the status indication of the set with power management function are as follows,

| STATUS           | Power Spec         |                    | LED   |
|------------------|--------------------|--------------------|-------|
|                  | 120V <sub>AC</sub> | 230V <sub>AC</sub> |       |
| Active           | Typical            | 55 W               | Green |
| Sleep            | < 1 W              | < 1 W              | Amber |
| Power switch off | < 1 W              | < 1 W              | -     |

In Monitor power saving mode, which no H&V sync, or absent either H-sync or V-sync input via VGA connector. The monitor will enter "Monitor saving mode". The way to wake up or change source:

1. "Source" key on remote control → change to TV source directly.

In TV power saving mode, which switched off by RC "Standby" key, SLEEP TIMER function or no TV signal input for 30 minutes, the monitor will enter TV standby mode, and LED shows amber color. The way to wake up:

1. "Source" key on remote control → change to TV source directly.
2. "Standby" key on remote control.

## 3.6 Display identification

In accordance with DDC requirement - "DDC2B."

|            |          |                           |                 |   |   |    |    |
|------------|----------|---------------------------|-----------------|---|---|----|----|
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|            |          | TYPE : MF605T/17          |                 |   |   |    |    |
|            |          | BRAND : Magnavox          |                 |   |   |    |    |
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## 4.0 Visual characteristics

## 4.1 Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

- (1) Input signal : As defined in 3.3.1.2, 800 x 600 non-interlaced mode (37.9 KHz), signal sources must have 75 ohm output impedance.
- (2) Luminance setting: controls to be set to 450 Nits (typical) with full screen 100 % duty cycle white signal.
- (3) Warm up: more than 30 minutes after power on with signal supplied.
- (4) Ambient light: 400 -- 600 lux.
- (5) Ambient temperature: 25 +/- 2 °C

## 4.2 Resolution

Mode 3, 6, 7 are preset modes that should pass QA inspection.  
Mode 1, 2, 4, 5, 8 will run auto adjustment only, and W/O QA checking.

| # | Resolution | Frequency  | Pixel rate | Sync   | Comment |
|---|------------|------------|------------|--------|---------|
| 1 | 640X350    | 31.5K/70HZ | 25.175     | (+/-)  | IBM VGA |
| 2 | 720X400    | 31.5K/70HZ | 28.322     | (-/ +) | IBM VGA |
| 3 | 640X480    | 31.5K/60HZ | 25.175     | (-/-)  | IBM VGA |
| 4 | 640X480    | 35.0K/67HZ | 30.24      | (-/-)  | MAC     |
| 5 | 640X480    | 37.5K/75HZ | 31.501     | (-/-)  | VESA    |
| 6 | 800X600    | 35.2K/56HZ | 36         | (+/-)  | VESA    |
| 7 | 800X600    | 37.9K/60HZ | 40         | (+/-)  | VESA    |
| 8 | 800X600    | 46.9K/75HZ | 49.498     | (+/-)  | VESA    |

## 4.3 Brightness:

Typical 450 nits at maximum contrast and Brightness. (at center of the screen, Fig. 1 )

## 4.4 Image size

4.4.1 Actual display size 408 x 306 mm

|   |          |                           |            |                |    |
|---|----------|---------------------------|------------|----------------|----|
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|   |          | BRAND : Magnavox          |            |                |    |
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## 4.5 Brightness uniformity

Set contrast at 100% and turn the brightness to Max. (At original color)

Apply the Fig 1, it should comply with the following formula:

$$\frac{\text{Minimum luminance of five points (brightness)}}{\text{Maximum luminance of five points (brightness)}} > 75\%$$

## 4.6 PC White color adjustment

There are three factory preset white color 8500K

Apply full white pattern, with brightness in 50 % position and the contrast control at 50% position.

The 1931 CIE Chromaticity (color triangle) diagram (x,y) coordinate for the screen center should be:

$$\begin{aligned} 8500\text{K CIE coordinates} \quad X &= 0.289 \pm 0.030 \\ Y &= 0.304 \pm 0.030 \end{aligned}$$

## 4.7 TV White color adjustment

There is one factory preset white color  $x=0.289 \pm 0.030$ ;  $y=0.304 \pm 0.030$  for TV RF signal with the 1931 CIE Chromaticity diagram (x,y) coordinate ,FLUKE54200 color temp pattern, Smart picture is Personal.

## 4.8 TV picture centering.

Use CVBS (PAL and NTSC) input with cross hatch pattern to check the picture centering and should be

$$\text{Left(size)-right(size)} < \pm 3\text{mm.}$$

$$\text{Up(size)-down(size)} < \pm 3\text{mm.}$$

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## 5.0 Mechanical characteristics

## 5.1 Controls

Top Control :

- Up key
- Down key
- Menu key
- Right key
- Left key

Front

- RC sensor
- DC power switch

Rear I/O :

- DC inlet
- PC D-sub
- Tuner input
- Cinch CVBS input (AV)
- Cinch Audio input
- (S-video and CVBS use same audio)
- S-Video input
- Mini jack PC audio input
- Ypbpr,
- Audio for YPbPr

## 5.2 Unit dimension / Weight

Set dimension (incl. pedestal): 590mm W x 448.5mm H x 196mm D

Net weight: 8 Kg

## 5.3 Tilt base

tilt angle : 0 to 20 degree

## 5.4 Transportation packages

## 5.4.1 Shipping dimension/Weight

Carton dimension : 680mm W x 533mm H x 235mm D

Gross weight : 9.2 Kg

## 5.4.2 Block unit / Palletization (Air shipment)

| layers/block | sets/layer | sets/block unit |
|--------------|------------|-----------------|
| 9            | 4          | 36              |

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## 6.0 Environmental characteristics

The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

## 6.1 Susceptibility of display to external environment

## Operating

- Temperature : 0 to 35 °C
- Humidity : 80% max
- Altitude : 0-3658m
- Air pressure : 600-1100 mBAR

## Storage

- Temperature : -20 to 60 °C
  - Humidity : 95% max ( < 40°C )
  - Altitude : 0-12192m
  - Air pressure : 300-1100 mBAR
- Note: recommend at 0 to 35°C, Humidity less than 60 %

## 6.2 Transportation tests

| Standard       |             | ISTA-1A  |
|----------------|-------------|--|
| Drop Test      | Height      | 61cm   |
|                | Sequence    | 1C-3E-6F (10 drops)  |
|                | Test Result | Electrical function ok<br>Mechanical function ok<br>No serious damage on set appearance<br>(room temp./-10°C, humidity 70 %) |
| Vibration Test | Sequence    | --- PACKAGING<br>5~500 Hz , 0.73Gms , 30 min. for Each axis(X,Y,Z)   |
|                | Test Result | Electrical function ok<br>Mechanical function ok<br>No serious damage on set appearance                                      |

## 6.3 Display disturbances from external environment

According to IEC 801-2 for ESD disturbances

## 7.0 Reliability

## 7.1 Mean Time Between Failures

System MTBF (Excluding the LCD panel and CCFL) : 50,000 hrs  
CCFL MTBF : 40,000 hrs

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CLASS NO.

20" F1 TFT LCD Monitor/TV  
TYPE : 20MF605T/17  
BRAND : Magnavox

8639 000 16038

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8.0 Quality assurance requirements

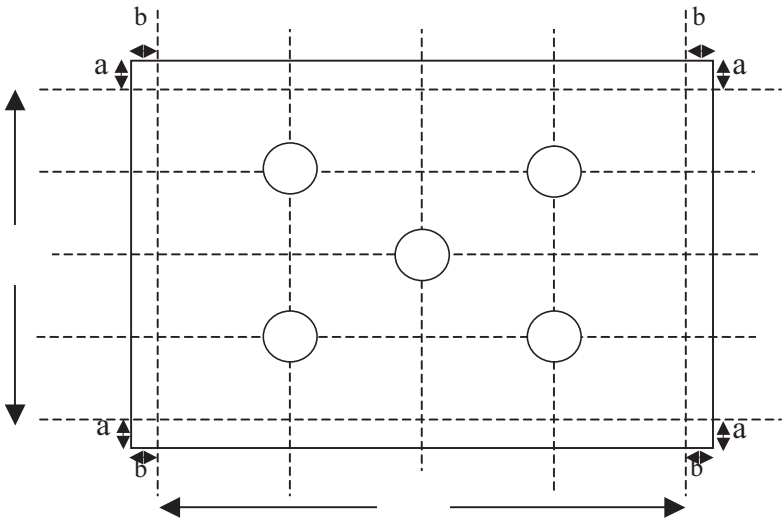
8.1 Acceptance test  
according to MIL-STD-105D Control II level

AQL : 0.65 (major)  
2.5 (minor)  
(please also refer to annual quality agreement)

9.0 Serviceability

The serviceability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

Fig 1: Brightness and Uniformity measure points



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|               |  |                           |  |   |  |
|---------------|--|---------------------------|--|---|--|
| CLASS NO.     |  | 20" F1 TFT LCD Monitor/TV |  | 8639 000 16038  |  |
|               |  | TYPE :20MF605T/17         |  |   |  |
|               |  | BRAND : Magnavox          |  |   |  |
| 2004-12-15    |  | 23                        |  | 590 — 19 10 A4  |  |
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Table 1.

## NAFTA TV Channels

## US- Air broadcast channel

| Broadcast Channel | Video Carrier (MHz) | Audio Carrier (MHz) | Range (MHz) |
|-------------------|---------------------|---------------------|-------------|
| 2                 | 55.25               | 59.75               | 54-60       |
| 3                 | 61.25               | 65.75               | 60-66       |
| 4                 | 67.25               | 71.75               | 66-72       |
| 5                 | 77.25               | 81.75               | 76-82       |
| 6                 | 83.25               | 87.75               | 82-88       |
| 7                 | 175.25              | 179.75              | 174-180     |
| 8                 | 181.25              | 185.75              | 180-186     |
| 9                 | 187.25              | 191.75              | 186-192     |
| 10                | 193.25              | 197.75              | 192-198     |
| 11                | 199.25              | 203.75              | 198-204     |
| 12                | 205.25              | 209.75              | 204-210     |
| 13                | 211.25              | 215.75              | 210-216     |
| 14                | 471.25              | 475.75              | 470-476     |
| 15                | 477.25              | 481.75              | 476-482     |
| 16                | 483.25              | 487.75              | 482-488     |
| 17                | 489.25              | 493.75              | 488-494     |
| 18                | 495.25              | 499.75              | 494-500     |
| 19                | 501.25              | 505.75              | 500-506     |
| 20                | 507.25              | 511.75              | 506-512     |
| 21                | 513.25              | 517.75              | 512-518     |
| 22                | 519.25              | 523.75              | 518-524     |
| 23                | 525.25              | 529.75              | 524-530     |
| 24                | 531.25              | 535.75              | 530-536     |
| 25                | 537.25              | 541.75              | 536-542     |
| 26                | 543.25              | 547.75              | 542-548     |
| 27                | 549.25              | 553.75              | 548-554     |
| 28                | 555.25              | 559.75              | 554-560     |
| 29                | 561.25              | 565.75              | 560-566     |
| 30                | 567.25              | 571.75              | 566-572     |
| 31                | 573.25              | 577.75              | 572-578     |
| 32                | 579.25              | 583.75              | 578-584     |
| 33                | 585.25              | 589.75              | 584-590     |
| 34                | 591.25              | 595.75              | 590-596     |
| 35                | 597.25              | 601.75              | 596-602     |
| 36                | 603.25              | 607.75              | 602-608     |
| 37                | 609.25              | 613.75              | 608-614     |
| 38                | 615.25              | 619.75              | 614-620     |
| 39                | 621.25              | 625.75              | 620-626     |
| 40                | 627.25              | 631.75              | 626-632     |
| 41                | 633.25              | 637.75              | 632-638     |
| 42                | 639.25              | 643.75              | 638-644     |
| 43                | 645.25              | 649.75              | 644-650     |
| 44                | 651.25              | 655.75              | 650-656     |
| 45                | 657.25              | 661.75              | 656-662     |
| 46                | 663.25              | 667.75              | 662-668     |
| 47                | 669.25              | 673.75              | 668-674     |
| 48                | 675.25              | 679.75              | 674-680     |
| 49                | 681.25              | 685.75              | 680-686     |
| 50                | 687.25              | 691.75              | 686-692     |

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|    |        |        |         |
|----|--------|--------|---------|
| 51 | 673.25 | 697.75 | 692-698 |
| 52 | 699.25 | 703.75 | 698-704 |
| 53 | 705.25 | 709.75 | 704-710 |
| 54 | 711.25 | 715.75 | 710-716 |
| 55 | 717.25 | 721.75 | 716-722 |
| 56 | 723.25 | 727.75 | 722-728 |
| 57 | 729.25 | 733.75 | 728-734 |
| 58 | 735.25 | 739.75 | 734-740 |
| 59 | 741.25 | 745.75 | 740-746 |
| 60 | 747.25 | 751.75 | 746-752 |
| 61 | 753.25 | 757.75 | 752-758 |
| 62 | 759.25 | 763.75 | 758-764 |
| 63 | 765.25 | 769.75 | 764-770 |
| 64 | 771.25 | 775.75 | 770-776 |
| 65 | 777.25 | 781.75 | 776-782 |
| 66 | 783.25 | 787.75 | 782-788 |
| 67 | 789.25 | 793.75 | 788-794 |
| 68 | 795.25 | 799.75 | 794-800 |
| 69 | 801.25 | 805.75 | 800-806 |

## US-Cable channel

| Cable Channel | Video carrier MHz | Audio carrier MHz | Range MHz |
|---------------|-------------------|-------------------|-----------|
| 2             | 55.25             | 59.75             | 54-60     |
| 3             | 61.25             | 65.75             | 60-66     |
| 4             | 67.25             | 71.75             | 66-72     |
| 1             | 73.25             | 77.75             | 72-78     |
| 5             | 79.25             | 83.75             | 76-82     |
| 6             | 85.25             | 89.75             | 82-88     |
| 95            | 91.25             | 95.75             | 90-96     |
| 96            | 97.25             | 101.75            | 96-102    |
| 97            | 103.25            | 107.75            | 102-108   |
| 98            | 109.25            | 113.75            | 108-114   |
| 99            | 115.25            | 119.75            | 114-120   |
| 14            | 121.25            | 125.75            | 120-126   |
| 15            | 127.25            | 131.75            | 126-132   |
| 16            | 133.25            | 137.75            | 132-138   |
| 17            | 139.25            | 143.75            | 138-144   |
| 18            | 145.25            | 149.75            | 144-150   |
| 19            | 151.25            | 155.75            | 150-156   |
| 20            | 157.25            | 161.75            | 156-162   |
| 21            | 163.25            | 167.75            | 162-168   |
| 22            | 169.25            | 173.75            | 168-174   |
| 7             | 175.25            | 179.75            | 174-180   |
| 8             | 181.25            | 185.75            | 180-186   |
| 9             | 187.25            | 191.75            | 186-192   |
| 10            | 193.25            | 197.75            | 192-198   |
| 11            | 199.25            | 203.75            | 198-204   |
| 12            | 205.25            | 209.75            | 204-210   |
| 13            | 211.25            | 215.75            | 210-216   |
| 23            | 217.25            | 221.75            | 216-222   |
| 24            | 223.25            | 227.75            | 222-228   |
| 25            | 229.25            | 233.75            | 228-234   |

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## GENERAL PRODUCT SPECIFICATION

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|    |        |        |         |
|----|--------|--------|---------|
| 26 | 235.25 | 239.75 | 234-240 |
| 27 | 241.25 | 245.75 | 240-246 |
| 28 | 247.25 | 251.75 | 246-252 |
| 29 | 253.25 | 257.75 | 252-258 |
| 30 | 259.25 | 263.75 | 258-264 |
| 31 | 265.25 | 269.75 | 264-270 |
| 32 | 271.25 | 275.75 | 270-276 |
| 33 | 277.25 | 281.75 | 276-282 |
| 34 | 283.25 | 287.75 | 282-288 |
| 35 | 289.25 | 293.75 | 288-294 |
| 36 | 295.25 | 299.75 | 294-300 |
| 37 | 301.25 | 305.75 | 300-306 |
| 38 | 307.25 | 311.75 | 306-312 |
| 39 | 313.25 | 317.75 | 312-318 |
| 40 | 319.25 | 323.75 | 318-324 |
| 41 | 325.25 | 329.75 | 324-330 |
| 42 | 331.25 | 335.75 | 330-336 |
| 43 | 337.25 | 341.75 | 336-342 |
| 44 | 343.25 | 347.75 | 342-348 |
| 45 | 349.25 | 353.75 | 348-354 |
| 46 | 355.25 | 359.75 | 354-360 |
| 47 | 361.25 | 365.75 | 360-366 |
| 48 | 367.25 | 371.75 | 366-372 |
| 49 | 373.25 | 377.75 | 372-378 |
| 50 | 379.25 | 383.75 | 378-384 |
| 51 | 385.25 | 389.75 | 384-390 |
| 52 | 391.25 | 395.75 | 390-396 |
| 53 | 397.25 | 401.75 | 396-402 |
| 54 | 403.25 | 407.75 | 402-408 |
| 55 | 409.25 | 413.75 | 408-414 |
| 56 | 415.25 | 419.75 | 414-420 |
| 57 | 421.25 | 425.75 | 420-426 |
| 58 | 427.25 | 431.75 | 426-432 |
| 59 | 433.25 | 437.75 | 432-438 |
| 60 | 439.25 | 443.75 | 438-444 |
| 61 | 445.25 | 449.75 | 444-450 |
| 62 | 451.25 | 455.75 | 450-456 |
| 63 | 457.25 | 461.75 | 456-462 |
| 64 | 463.25 | 467.75 | 462-468 |
| 65 | 469.25 | 473.75 | 468-474 |
| 66 | 475.25 | 479.25 | 474-480 |
| 67 | 481.25 | 485.75 | 480-486 |
| 68 | 487.25 | 491.75 | 486-492 |
| 69 | 493.25 | 497.75 | 492-498 |
| 70 | 499.25 | 503.75 | 498-504 |
| 71 | 505.25 | 509.75 | 504-510 |
| 72 | 511.25 | 515.75 | 510-516 |
| 73 | 517.25 | 521.75 | 516-522 |
| 74 | 523.25 | 527.75 | 522-528 |
| 75 | 529.25 | 533.75 | 528-534 |
| 76 | 535.25 | 539.75 | 534-540 |
| 77 | 541.25 | 545.75 | 540-546 |
| 78 | 547.25 | 551.75 | 546-552 |
| 79 | 553.25 | 557.75 | 552-558 |
| 80 | 559.25 | 563.75 | 558-564 |
| 81 | 565.25 | 569.75 | 564-570 |

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# GENERAL PRODUCT SPECIFICATION

Magnavox LCD TV

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|     |        |        |         |
|-----|--------|--------|---------|
| 82  | 571.25 | 575.75 | 570-576 |
| 83  | 577.25 | 581.75 | 576-582 |
| 84  | 583.25 | 587.75 | 582-588 |
| 85  | 589.25 | 593.75 | 588-594 |
| 86  | 595.25 | 599.75 | 594-600 |
| 87  | 601.25 | 605.75 | 600-606 |
| 88  | 607.25 | 611.75 | 606-612 |
| 89  | 613.25 | 617.75 | 612-618 |
| 90  | 619.25 | 623.75 | 618-624 |
| 91  | 625.25 | 629.75 | 624-630 |
| 92  | 631.25 | 635.75 | 630-636 |
| 93  | 637.25 | 641.75 | 636-642 |
| 94  | 643.25 | 647.75 | 642-648 |
| 100 | 649.25 | 653.75 | 648-654 |
| 101 | 655.25 | 659.75 | 654-660 |
| 102 | 661.25 | 665.75 | 660-666 |
| 103 | 667.25 | 671.75 | 666-672 |
| 104 | 673.25 | 677.75 | 672-678 |
| 105 | 679.25 | 683.75 | 678-684 |
| 106 | 685.25 | 689.75 | 684-690 |
| 107 | 691.25 | 695.75 | 690-696 |
| 108 | 697.25 | 701.75 | 696-702 |
| 109 | 703.25 | 707.75 | 702-708 |
| 110 | 709.25 | 713.75 | 708-714 |
| 111 | 715.25 | 719.75 | 714-720 |
| 112 | 721.25 | 725.75 | 720-726 |
| 113 | 727.25 | 731.75 | 726-732 |
| 114 | 733.25 | 737.75 | 732-738 |
| 115 | 739.25 | 743.75 | 738-744 |
| 116 | 745.25 | 749.75 | 744-750 |
| 117 | 751.25 | 755.75 | 750-756 |
| 118 | 757.25 | 761.75 | 756-762 |
| 119 | 763.25 | 767.75 | 762-768 |
| 120 | 769.25 | 773.75 | 768-774 |
| 121 | 775.25 | 779.75 | 774-780 |
| 122 | 781.25 | 785.75 | 780-786 |
| 123 | 787.25 | 791.75 | 786-792 |
| 124 | 793.25 | 797.75 | 792-798 |
| 125 | 799.25 | 803.75 | 798-804 |

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1. General Description

This LCD-TV-F1 support PC analog input up to 1280X768 75Hz mode for WXGA panel, and support TV (RF), YC, CVBS, and SCART. Also for Y Pb Pr signal input from SDTV to HDTV (480i, 480P, 720P, 1080i 60Hz and 576i, 576P, 720P, 1080i 50H z).

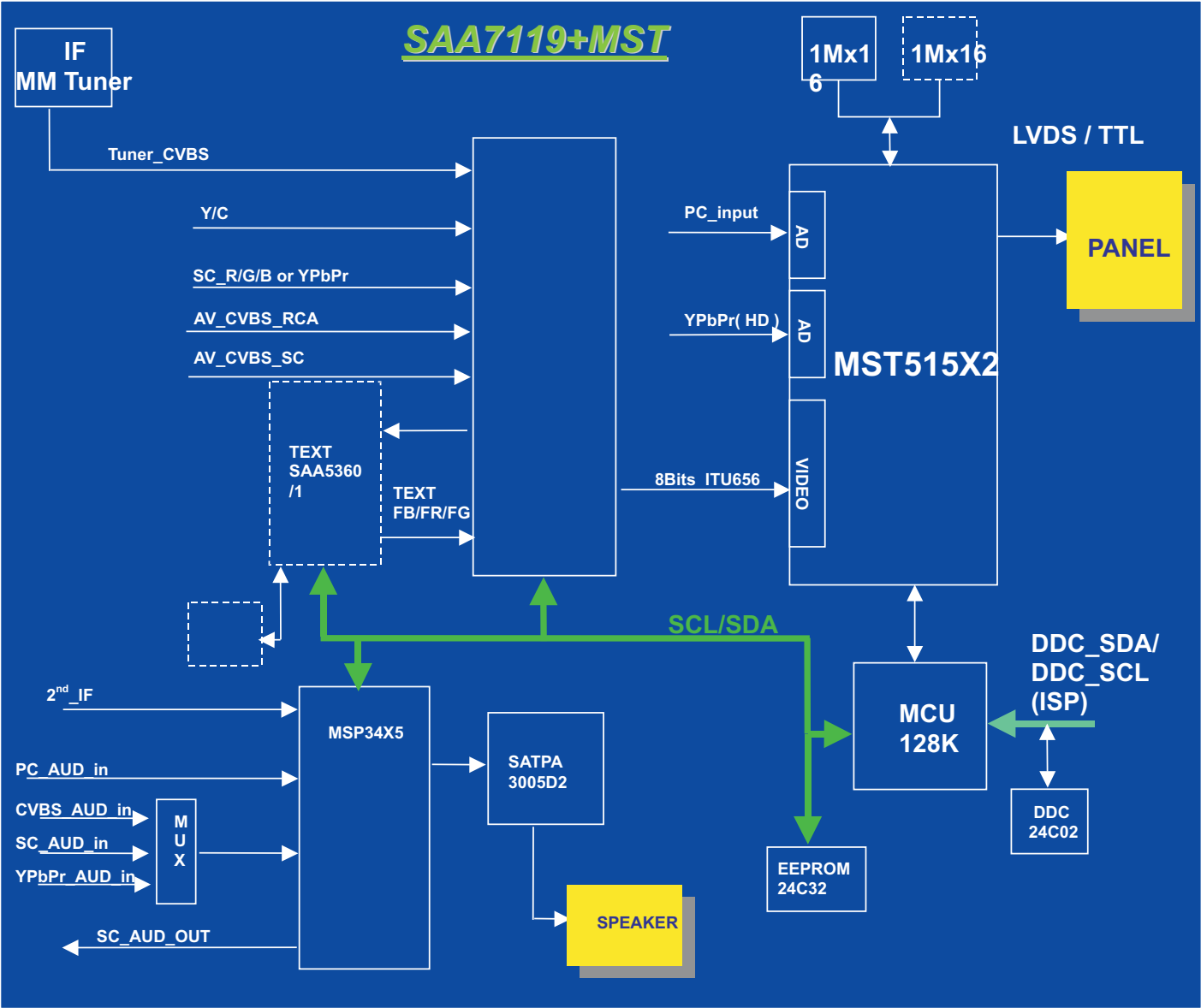
This LCD - TV use MST51510 as Scaler engine, which has embedded Analog D-sub, digital DVI decoder, scaling input signal to panel OSD mapping and simple 3D de-interlacer. The extra SDRAM is to accomplish video frame rate conversion and PIP function.

The external CPU can be used to back light control, RC, keypad input, IIC I/O communication and. TV tuning control, sound control, and SAA7119A video decoder.

Video decoder SAA7119 is used for TV video processing and convert it with CCIR 601/16bits or 656/8bits digital format and send to Scaler for de-interlace process, and also CC,V-chip data decode.

One audio decoder MSP34XXG is used for TV sound processing, and output to post amplifier and SCART out.

An option function in WE model Teltext display . Data decode is done by SAA5360, output RGB/FB is to video decoder input for text overlapping. In non-text model, this chip is N.C.



Scaler choice:

If the panel interface is TTL type: 20" use        MST51502L

If the panel interface is LVDS type: 14"15"17 "use MST51512L

◀◀ Go to cover page

Tuner & sound decoder deviation.

|            | WE                          | NAFT                      | AP                          | China                     |
|------------|-----------------------------|---------------------------|-----------------------------|---------------------------|
| 1601 Tuner | FQ1216MK3<br>3139 147 18291 | FQ1236<br>3139 147 18351  | FQ1216 PN<br>3139 147 20401 | FQ1256<br>3139 147 20131  |
| 7101 Msp   | Msp3415<br>9322 194 13671   | Msp3445<br>9322 194 12671 | Msp3415<br>9322 194 13671   | Msp3415<br>9322 194 13671 |

3. Function description:

MM tuner is used to receive RF wave and output CVBS and 2nd IF signal. CVBS is to video decoder (SAA7119) for color process, 2nd IF is to sound decoder (MSP34x5) for audio process. The tuner control is via IIC ex. channel tuning. For different TV system, tuner and sound decoder have diversity as above.

Standard TV input (Tuner, S-video, CVBS, SCART) is processed by SAA7119, But YPbPr, SDTV and HDTV(480i, 576i, 480p,576p,720p,1080i), is done by scaler MST51512L/502L ADC. But the signal is still link to SAA7119 if PIP (video in graph) function is requested. Then all YPbPr signal processed by SAA7119 could be the PIP video source. (\* May use down sampling in HD0) MV protect is decoded by scaler.

Video decoder SAA7119, is in charge of color decoding, could support PAL, NTSC and SECAM world wide system. Compare to SAA7118, SAA7119 improve some picture quality, like V-chip CC I2C read-back, LTI, CTI, skin tone correction(see task A), also the HD0 is supported, so if F1 need PIP function then the The

Teltext function is for WE model, need a extra IC SAA5360. CVBS input, R/G/B, FB, out. Due to the SAA5360 request input signal 1Vrms and only one input channel, so the CVBS input source is from SAA7119 AOUT (CVBS out with 1Vrms). The R/G/B FB output into SAA7119 by AI22/AI32/AI42, and AI44 could overlay on any video source.

Sound decoder MSP3415/45 is responsible to sound decode of tuner 2nd IF. It has one 2nd IF, two selectable audio sources input. And one loudspeaker, one scart out. Due to the input port limitation, a MUX is added for AV source select( PC audio in is fix in SC1). If the post audio amplifier is gain fixed type then the volume adjust will be on MSP34x5.

Scaler MST51502L/51512L besides scaling function, PIP, 3D de-interlacer, color enhance are major feature. Even de-interlacer is not so good but for static picture is enough to avoid image sticking.

In America market, to avoid patent issue, two SDRAM is necessary for graph frame buffer. But in else region one SDRAM is enough. Of course, if no PC mode in spec, then one SDRAM for all model.

The scaler structure limitation, the PIP source only from "video port", 8 bits or 16 bits. The sub window /PIP size can enlarge to half screen.

MCU, NT68F632AL, is 128K flash ROM inside. Power control, RC5 I/O, and key function all done by here. All chip communication is by IIC (SDA/SCL), and ISP is via DDCIIC, but if PC mode un-supported, then a reserved 6pin connector is for same application.

Go to cover page

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

HI-POT TEST INSTRUCTION

1.Application requirements

- 1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.
- 1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

- 2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.
- 2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.
- 2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

| Condition             | HiPot Test for products where the mains input range is Full range(or 220V AC) | HiPot Test for products where the mains input is 110V AC(USA type) | Ground Continuity Test requirement   |
|-----------------------|---|--|--|
| Test voltage          | 2820VDC (2000VAC)   | 1700VDC (1200VAC)  | Test current: 25A,AC<br>Test time: 3 seconds(min.)<br>Resistance required: <=0.09+Rohm, R is the resistance of the mains cord. |
| Test time (min.)      | 3 seconds   | 1 second   |  |
| Trip current (Tester) | set at 100 uA for Max. limitation; set at 0.1 uA for Min. Limitation          | 5 mA   |  |
| Ramp time (Tester)    | set at 2 seconds  |  |  |

- 2.2.1 The minimum test duration for Quality Control Inspector must be 1 minute.
- 2.2.2 The test voltage must be maintained within the specified voltage + 5%.
- 2.2.3 There must be no breakdown during the test.
- 2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

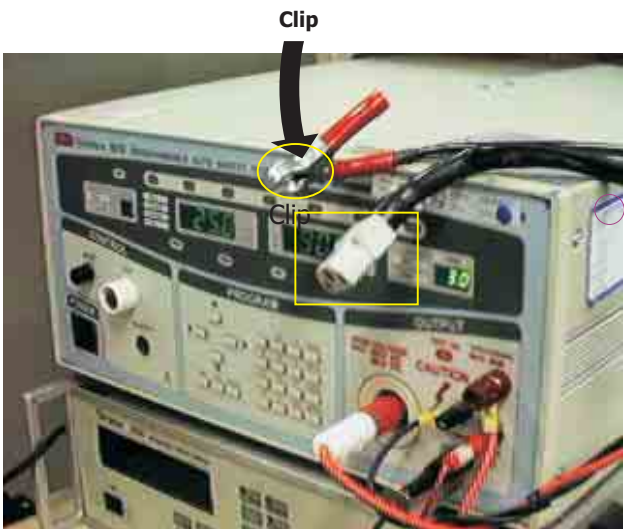
3. Equipments and Connection

3.1. Equipments

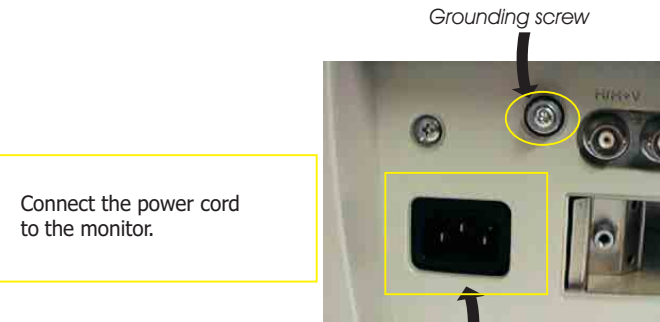
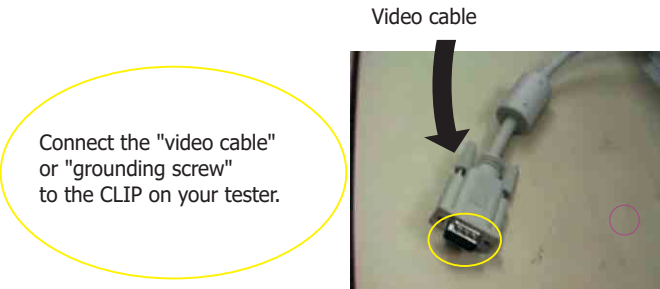
- For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
  - ChenHwa 510B Digital Grounding Continuity Tester
  - ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection

- \* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



(ChenHwa 9032 tester)



(Rear view of monitor)

4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

## TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

### Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous service may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

#### Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an asterisk by the Ref. No. in the parts list and enclosed within a broken line \* (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform a leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock.

\* Broken line

#### Implosion

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

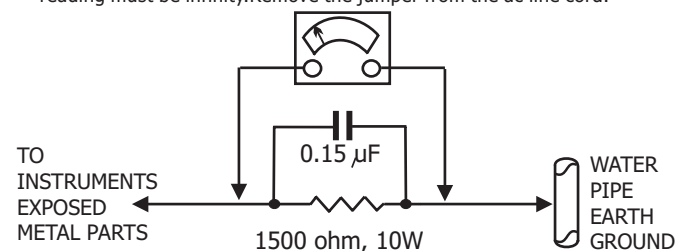
#### X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with

6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

#### Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



#### Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15µf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohmsy volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

#### Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved tube.

#### Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

**WARNING :** Before removing the CRT anode cap, turn the unit OFF and short the HIGH VOLTAGE to the CRT DAG ground.  
**SERVICE NOTE :** The CRT DAG is not at chassis ground.